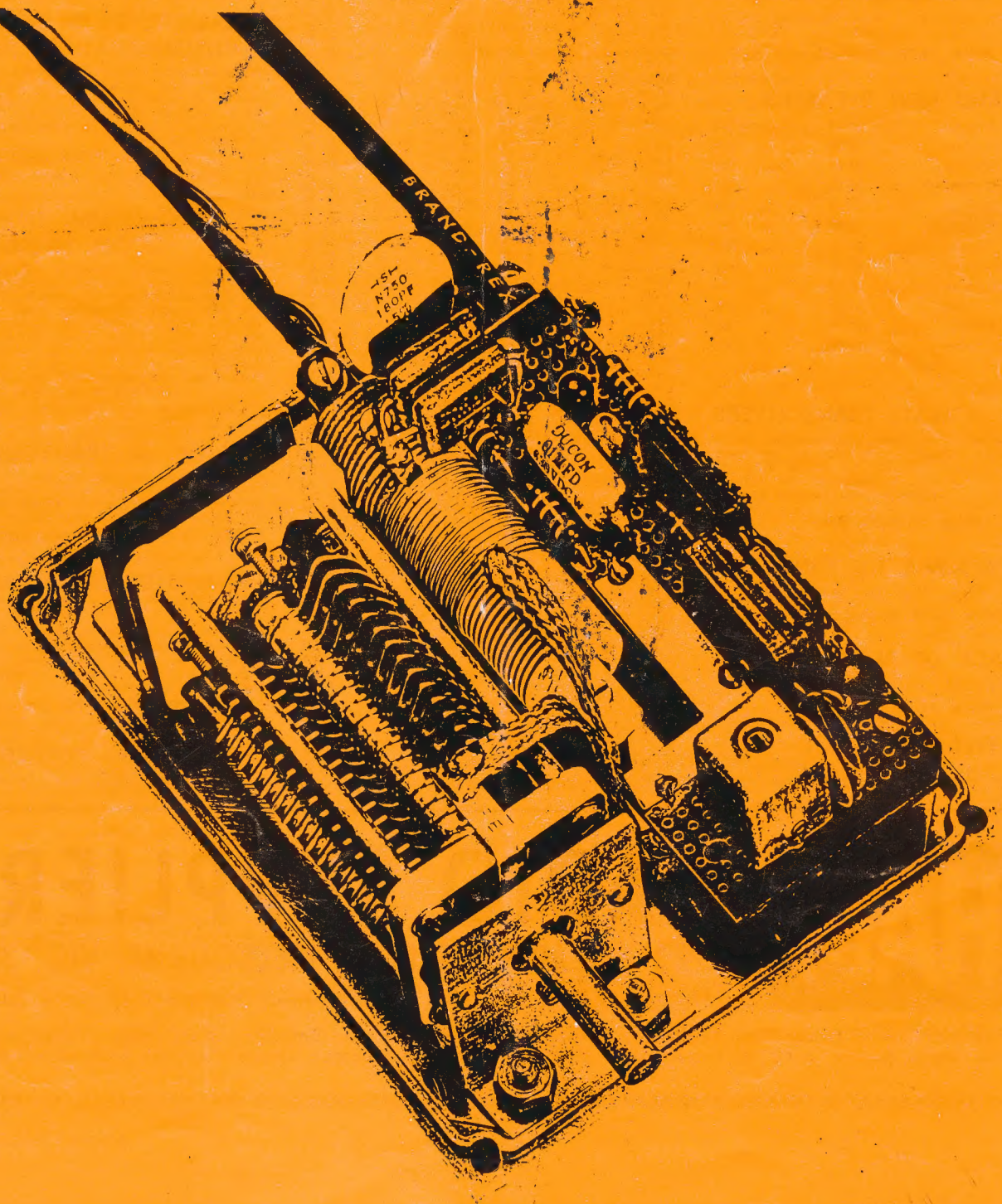
amateur radio

Vol. 38, No. 6

JUNE, 1970

Registered at G.P.O., Melbourne, for transmission by post as a periodical

Price 30 Cents



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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA. FOUNDED 1910

JUNE, 1970
Vol. 38, No. 6

Publishers:
VICTORIAN DIVISION W.I.A.
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Advertising Representatives:
AUSTRALIAN MEDIASERV
21 Smith St., Fitzroy, Vic., 3065. Tel. 41-4962.
P.O. Box 108, Fitzroy, Vic., 3065.

Advertisement material should be sent direct to the printers by the **first of each month.**

Hamads should be addressed to the Editor.

Printers:
"RICHMOND CHRONICLE," Phone 42-2419.
Shakespeare Street, Richmond, Vic., 3121.

★

All matters pertaining to "A.R." other than advertising and subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 36,
EAST MELBOURNE, VIC., 3002.

★

Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary and not to "A.R." direct. Two months' notice is required before a change of mailing address can be effected. Readers should note that any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence; in addition, "A.R." should also be notified. A convenient form is provided in the "Call Book".

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COVER STORY

Our front cover this month depicts the VFO section of a Solid State SSB Amateur Receiver designed by Messrs. Tobin and Clift of Fairchild. The receiver is the subject of an article which is currently being published in series form in "A.R."

COMMUNICATIONS CAREER

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For further information contact —

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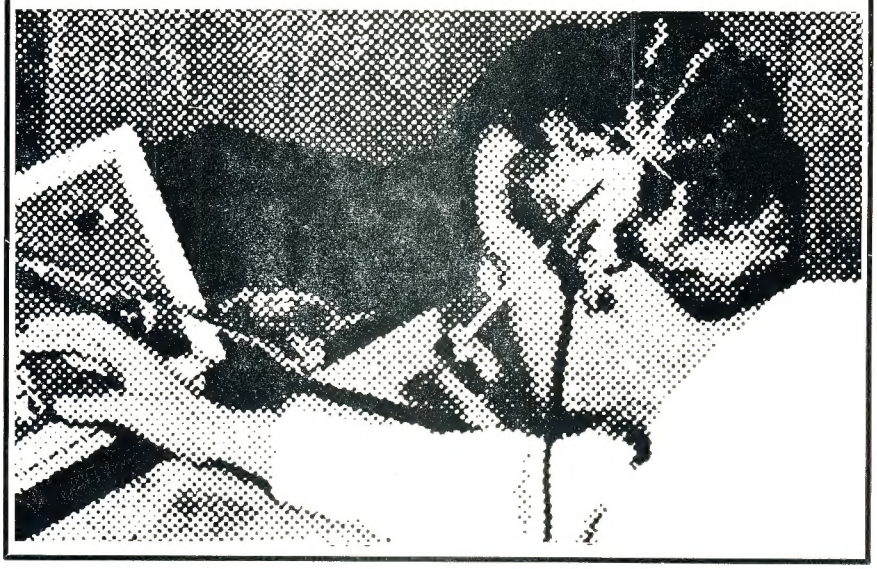
Department of Civil Aviation,
Aviation House,
188 Queen Street,
Melbourne, VIC. 3000
Telephone 620131



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All prices quoted are for equipment available ex stock, net, cash Springwood, N.S.W., **sales tax included** in every case, but subject to alteration without prior notice. Price increases are expected soon for antennas, none yet for YAESU MUSEN equipment, which is sold with factory backed **one-year warranty**. All Yaesu Musen units come complete with all plugs and power cables and English manuals, checked, tested and where required adjusted or modified before shipment.

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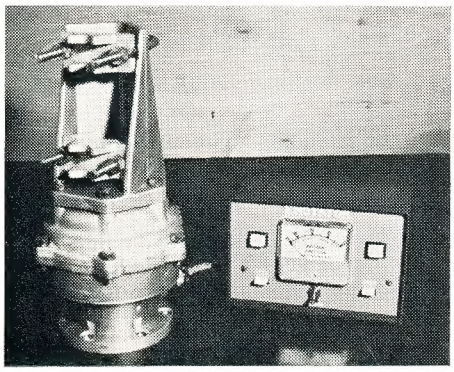

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1100M with Indicator-Control Box and bottom mast clamp, **$165.00.**
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Control cable: Seven conductors.
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Specifications and Prices subject to change.

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FEDERAL COMMENT

Because we so often refer to our own Division as "The Institute' in order to draw a distinction between our Division and our Federal organisation, many of us sometimes refer to the Federal body as the "Federal Executive".

Recently I heard the President of a Division on a Sunday morning broadcast refer to the advantage that the "Federal Executive" would receive as a result of the transfer of the Institute's publication activities from a Victorian Divisional responsibility to a "Federal Executive" responsibility. Of course, he didn't really mean that the "Federal Exectuive" as such would receive any advantage at all. He meant that the Wireless Institute of Australia would receive an advantage, and this is merely another way of saying that all the Divisions would receive an advantage.

The Federal Executive is exactly what its name implies—it is "the Executive"—not some sort of club within a club. It is a group elected to carry out a defined task—in exactly the same way as at a Divisional level the Divisional Council is elected to carry out a defined task. A trivial point? We don't think so. It is a form of verbal shorthand that if used, often describes a fundamental truth. The Federal body is not the Executive, but all the Divisions banded together for their mutual benefit.

Another example of the same sort of "wrong labelling" that comes to my mind is that at times at Federal Conventions a distinction has attempted to be drawn between "Executive" money and "Divisional" money. The only thing that is different is the source of the money; some coming from Executive activities such as the distribution of overseas publications (which one supposes is no more than a means of subsidising the Divisions) and some of it coming from Divisional per capita payments. If that is what the label means, then it is accurate. If it is taken to mean that some money is "ours" and some is "yours", then it is a misleading label. All the money is the Divisions'—and therefore it is all "yours" as a member of a Division.

We of the Executive do not wish to be thought of as some sort of rather exclusive and remote "club". We do not want to be faceless men. If we are, then we are failing in our task. If our Federal affairs are remote and intangible, then members can hardly be blamed for questioning the worth of the expenditure of part of their subscriptions on the expenses associated with our Federal body. If all the advantages are said to accrue to a small group of people in Melbourne, then an attitude that is at least questioning, can surely be justified.

No—the "Executive" does not get the benefit—the "Institute" does. We do not talk of "the Council" when we mean a Division. Let us say "Institute" when we mean our Federal organisation, and "Division" when we mean a Division.

M. J. Owen, VK3KI,
Federal President, W.I.A.

COUNT AND DISPLAY AT $6 PER DECADE

ROBERT H. BLACK, M.D., VK2QZ*

Who wants to count and, anyhow, why do you want to count and what do you want to count?

ABOUT a quarter of a century ago my young hopeful, then four years old, demanded a large sheet of paper and a pencil. He then proceeded industriously: I. II. III., etc., heading towards the infinite. I asked him what this was all about and he just gave me a brief look and carried on. Later he forsook the Romans and learnt about the Arabs; nowadays he dreams up plots for big black boxes.

Having estabilshed the necessity to count, the next question which naturally occurs is how much does it cost? Well, we have ten fingers, and I've always thought it rather a wonderful coincidence that man evolved in this way so that he was able to count up to ten on his digits. Some people evolved in a different way and they count up to five twice to get to ten, but they get there just the same. Fingers are free but these days events happen more quickly than you can count on your fingers and the total score with fingers is only applicable to things like the number of dollars you have in your pocket.

So you go to the market; why build something if you can buy it? You find that there are counters for sale—you can even buy one wrapped up in a radio receiver—but you need a government research grant to finance the deal. So it looks as though you have to build one; after all, integrated circuits have resulted in a tremendous lowering of costs and your labour is free.

* 2 Yerton Avenue, Hunters Hill, N.S.W., 2110.

You can spend quite an interesting time in the fantasy world of integrated circuits: decade counters, decoders, drivers, nixie tubes and so on. You do a few sums and the best you can say is that something might be possible at "a very modest cost" (Rowe, 1970). Modesty translated into quantitative terms still makes me blush.

A cost "breakthrough" in counting and digital readout was the description applied to a method described by Lancaster (1968). This used a variation of counting up to five twice to make ten. It used some integrated circuits, some transistors, and torch bulbs to display the figures. The cost per decade was $12 in the United States. Well, depending how modest you are, you might settle for that. But there's always that niggling thought that transistors are extremely cheap when you buy them on computer boards—about 7.5 cents each with all the diodes, capacitors and resistors free. They are even cheaper in Market St., San Francisco—ten boards for $1.

With these thoughts in mind a circuit was evolved (Fig. 1) and it was found to work. The cost is less than I was quoted for a 5 volt numerical read-out valve by itself, no counting.

A counting circuit used in the control of a model railway by Goodes (1969) forms the five-counting part of the circuit presented here. The odd-even technique and the lamp read-out was derived from Lancaster (1968) with some reference to Kench (1967) and Brown and Gunther (1969).

Negative pulses of appropriate size and shape are fed to a bistable (Q1, Q2) which switches on either Q8 or Q9 depending upon whether odd or even numbers have been counted. Every alternate input pulse results in an output pulse from the bistable being fed to the quinary ring counter Q3-Q7 in which all transistors except one are conducting at any one time. The non-conducting transistor provides bias to allow its lamp driver to conduct and light up its two lamps in turn—first the one supplied by the Even bus and then by the Odd bus.

Thus Q3 counts and displays 0 and 1, then because of the bias arrangement Q4 becomes the next non-conducting transistor and it counts and displays 2 and 3 and so on. The negative-going pulse which occurs when Q7 switches on at the end of the count of 9 is used as the input for the next decade. A negative pulse will re-set both the binary and quinary to display a count of 0. The photograph (Fig. 2) shows a suitable arrangement of the parts on a 5" x 3" phenolic board and the circuit has been drawn to correspond with this layout.

Five such decades have been constructed and no great difficulty has been experienced in getting them to count up to 100 KHz. You do tend to get tired of drilling holes! I have not used printed circuits—these are much

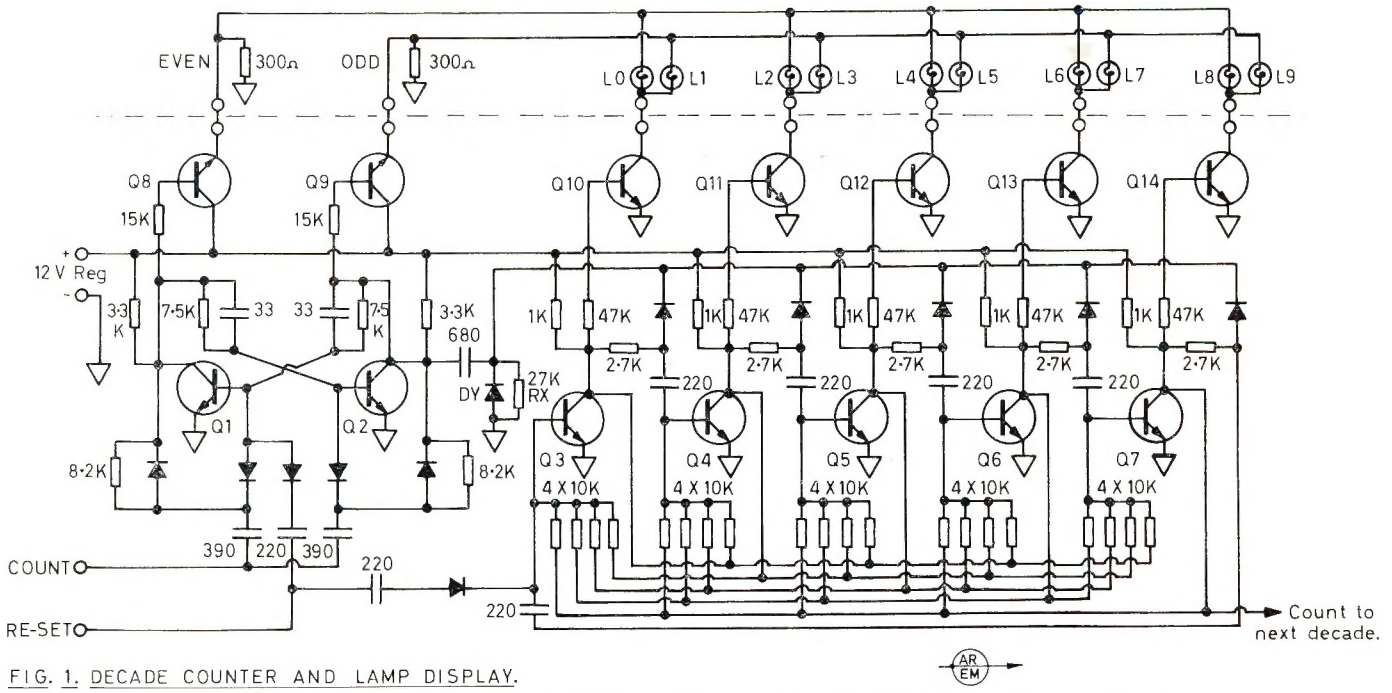

FIG. 1. DECADE COUNTER AND LAMP DISPLAY.

L0-L9: 6V. 20 mA., type T5GS. Q1-7 and Q10-14: type 083. Q8 and Q9: type 086 with heat sinks. Rx and Dy: see text. Diodes: green equals cathode. 47K resistors probably will require some variation in value.

too complex for me and, no doubt, the cost would go up.

A few items in the circuit need some comment. The resistor (Rx) and diode (Dy) found their way into the circuit when initial attempts to count at 100,000 KHz. were unsuccessful—I take it that they act as pulse conditioners. The resistors in the base leads of the lamp-driver bases are shown as 47K, but this value will require adjustment according to the characteristics of the individual transistor. A value of 47K was found suitable for those 083 transistors with a β of 100, a higher value of β will call for a higher value of resistor. Selection of transistors with the help of a transistor tester is thus a worthwhile procedure.

Some time is required to juggle with some of these resistors and their associated transistors to arrive at a condition where the required lamp lights up and its partner glows only faintly. But with careful adjustment there is no ambiguity in the count. When properly adjusted the read-out lamps are by no means lit to full brilliance. At a slow counting rate the partner of the lamp indicating at the time will be seen to glow faintly, the others do not.

The lamps are rated at 6 volts at 20 mA., Type T5GS printed circuit liliput telephone filament lamps (available from E. S. Rubin & Co. Pty. Ltd.), and are mounted in a row 0-9 on a separate board measuring 5" x $\frac{3}{4}$", together with the two 300 ohm resistors (Fig. 3). The life expectancy of these lamps is longer than an Amateur should spend on his hobby. The odd-even switching transistors are Type 086 with cog-wheel heat-sinks which come with them on the computer boards. They run slightly warm to the touch but will get hot if the lamps are too bright. The leads between lamps and transistors are anchored to both boards. If you don't do this, you'll lose some transistor pins. Each decade complete with its lamps draws about 125 mA. at a regulated 12 volts.

The two 15K resistors in the leads to the bases of the 086 transistors are minis and are mounted underneath the board.

The costing has been arrived at as follows:

14 transistors at 7.5c each	$1.05
34 resistors (20 x 10K, 5 x 47K, 5 x 1K, 2 x 3.3K, and 2 x 8.2K) at 4c each	1.36
10 lamps	2.95
	$5.36

Also to be bought are 1 x 680 pF. and 2 x 33 pF. capacitors and possibly two 300 ohm resistors and two mini 15K resistors, although these come on some boards. The diodes and the remaining capacitors and resistors come along with the transistors. Actually, the costing may be somewhat spurious; you buy the boards in selected batches of ten and you will end up with a lot of 680 ohm and other resistors and some 56 μH. inductors and so on, as well as some 071, 034, 033 transistors, but these will, no doubt, find application in things like Schmitt trigger, gating and monostable circuits. An R-C bridge is useful for sorting out the capacitors which are colour-coded.

Then, too, you have to think about timing the duration of the count. There's a very handy device described by Weisburg (1968) in "Wireless World" which generates pulses at 100 KHz., 10 KHz., 1 KHz., 100 Hz. and 10 Hz., starting with a 100 KHz. crystal which I have found very useful.

Of course, you'll get caught in the long run. If you want to count megacycles you will have to pay more for the fast-counting stages, but you don't have to display these. This note was not written to present the ultimate in counters—it certainly is not that—but it was felt that the home-brewers and tinkers may be able to develop something which will be within the reach of most Amateurs. Thinking it over, I may be quite out of date—nowadays some Amateurs spend almost as much on their gear as I do on a new car.

Oh, what do you count? Do you remember when you discovered the grid dipper? You wondered how you had managed to get on without it. Apart from counting and frequency measurement, you can measure voltage, resistance, capacitance and so on. There are interesting things called unijunctions which come in handy. The counter becomes part of the equipment on the bench, even on the operating table.

Thanks are due to Dr. Bruce McMillan who provided the photographs.

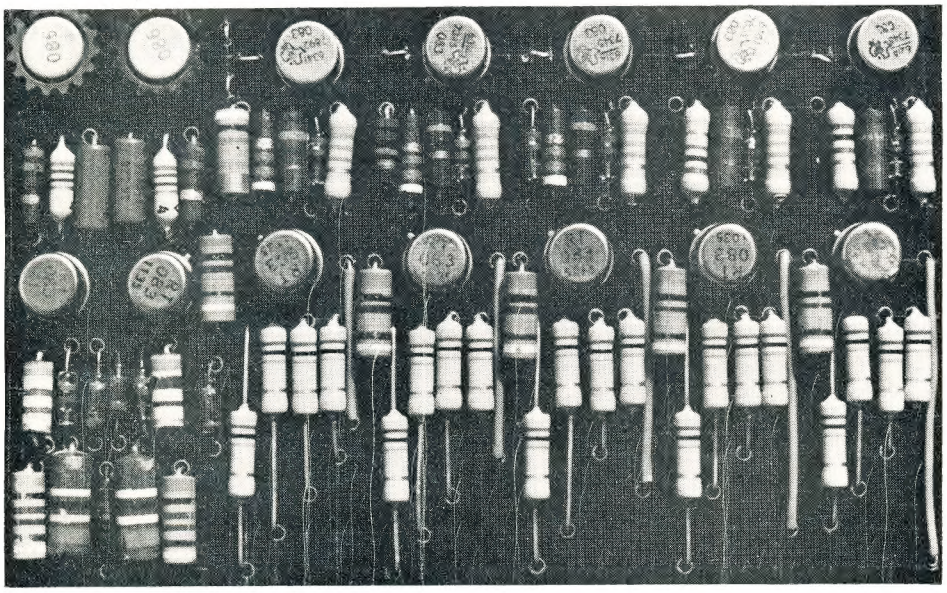

Fig. 2.—Decade Counter, 5 x 3 inches (photo 95 per cent. of size).

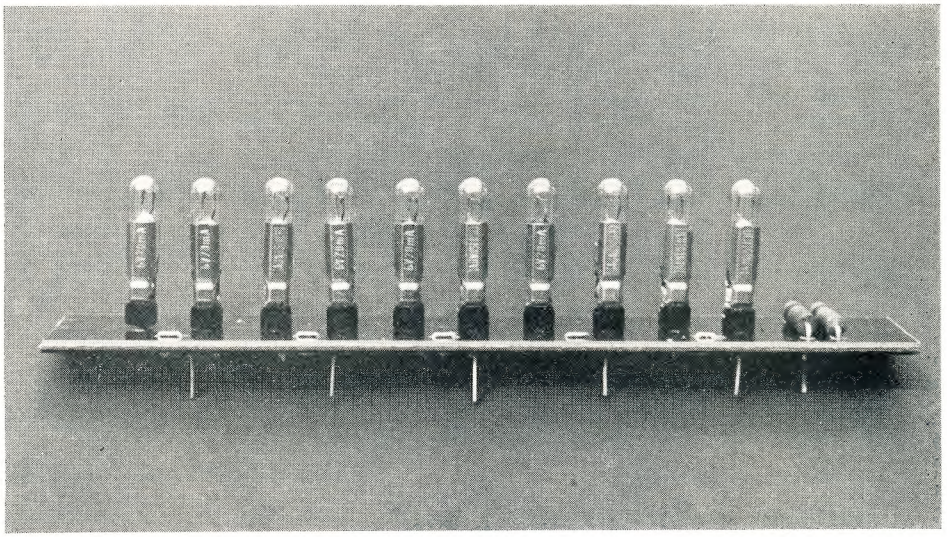

Fig. 3.—Lamps which indicate counts of 0-9 mounted on a separate board.

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A SOLID STATE AMATEUR S.S.B. RECEIVER

PART THREE

*B. G. CLIFT and A. E. TOBIN**

This article describes the design concepts, circuit operation and construction of the variable frequency oscillator covering the nominal range of 5 to 5.5 MHz. This provides the basic tuning function for the receiver on all bands of operation.

The fundamental problem with the design of any communications equipment covering a specified variable frequency range is that of frequency stability. Since the v.f.o. is the major contributing factor to the stability criteria of this receiver, the design of this section is extremely important and we must emphasise that care be taken in the construction and adherence to the circuit details which follow. Since single sideband reception is the major objective, it is desirable that the v.f.o. stability approach that of a crystal oscillator. This is only achieved by firstly taking all standard precautions and then carefully selecting suitable temperature compensating components.

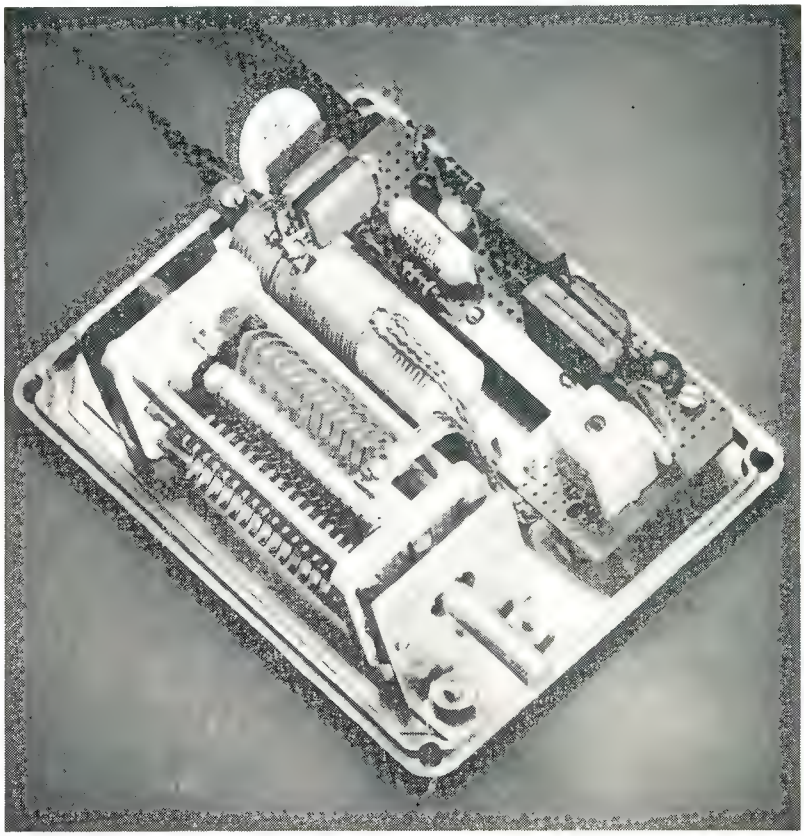
In any linear oscillator where stability is important, two main design objectives must be realised. Firstly, we must isolate as much as possible the frequency determining components from the active device. This is enhanced by keeping the impedances around the transistor low compared to the dynamic impedance of the tank circuit. Secondly, we must provide a low impedance take off point so that loading the oscillator will have negligible effect on frequency. Often it is difficult to achieve both a low output impedance and a usable output level, so the use of an isolation or buffer amplifier is required.

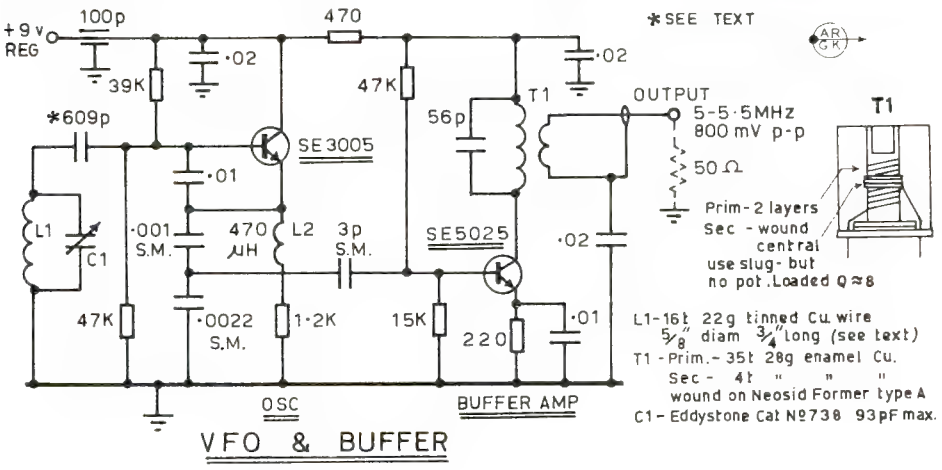
CIRCUIT DESCRIPTION

The circuit configuration used is that of a Colpitts Oscillator. This was chosen because it is relatively simple to provide low impedance terminations for the active device. Hence the effects of device impedance variations with temperature and supply voltage are kept to a minimum. The transistor used in this position is an SE3005, which is a relatively new device to the Australian market and offers slight advantages over the SE3001 or SE3002. It has a higher f_T, a lower feedback capacitance and also guarantees a differential collector to base capacitance of 0.15 pF. maximum (at 1 MHz., V_{CE} 5 to 10v.). However, either device may be used to achieve the same order of stability.

Temperature compensation is provided with the coupling capacitor between the tank circuit and the base of the SE3005. The actual value used here is about 609 pF. and is made up of 390 pF. silver mica, 39 pF. silver mica, and 180 pF. N750 disc ceramic. The 0.01 μF. between base and emitter is a Ducon mylar type DMA612. The other two capacitors in the oscillator with exception of rail by-pass and tuning capacitor are silver mica. The 0.0022 μF. is the low impedance take off point for the buffer amplifier and can, in fact, be larger, provided the summed capacitance of the 0.001 and 0.0022 μF. remains approximately constant.

The buffer amplifier stage uses an SE5025 and is very lightly coupled to the oscillator via a 3 pF. silver mica. It has a tuned collector which provides some reduction in harmonic content and allows a low impedance coupling to a terminated 50 ohm co-axial cable. The 50 ohm termination is important so





VFO & BUFFER

* Applications Laboratory, Fairchild Australia Pty. Ltd., 420 Mt. Dandenong Road, Croydon, Vic., 3136.

that the Q of the tuned circuit is reduced from 35 to approximately 8. The output level variation over the tuning range is approximately 10 per cent. and should be of no real concern.

It is important that the oscillator operate directly from the +9 volt regulated rail and not from a zener regulated supply. This is because the uA723 used in the power supply has a very good temperature stabilised reference—to use a zener would only result in the deterioration of the rail regulation because of temperature variations.

The v.f.o. is entirely housed in a 4½" x 3½" x 2" Eddystone die-cast box. All components are mounted directly onto the lid of the box to enable easy access to circuitry. A solderable ground plane was formed by simply placing a sheet of brass on the lid before mounting the components.

Angle brackets were made up for the gang so that it could be mounted with the shaft approximately central to the depth of the box. The brackets are isolated electrically from the frame of the gang by ¼" tapped plastic standoffs.

The coil was wound on a piece of grooved ceramic former from the normal radiator element. This was mounted on ½" standoffs via polystyrene plugs which were inserted into each end of the former. This method is fairly clumsy and an alternative method may be found. However, the method used does provide adequate mechanical rigidity which is the most important consideration. The coil should be mounted as closely as possible to the centre, but no less than ½" from the sides of the box, otherwise the Q will be seriously affected.

Other components of the circuit are mounted on a piece of matrix board which is again held via three standoffs from the box lid. All ground connections are made via one braided earth strap from the gang centre shaft to one point on the lid ground plane. A brass earth strap is also used on the matrix board to provide effective earthing of circuit components (see photograph).

PERFORMANCE

1.—Supply: +9 volts regulated.

2.—Frequency range: 4.970-5.530 MHz. (30 KHz. overlap).

3.—Output level: 800 mW. p.p. ±5% into 50 ohms.

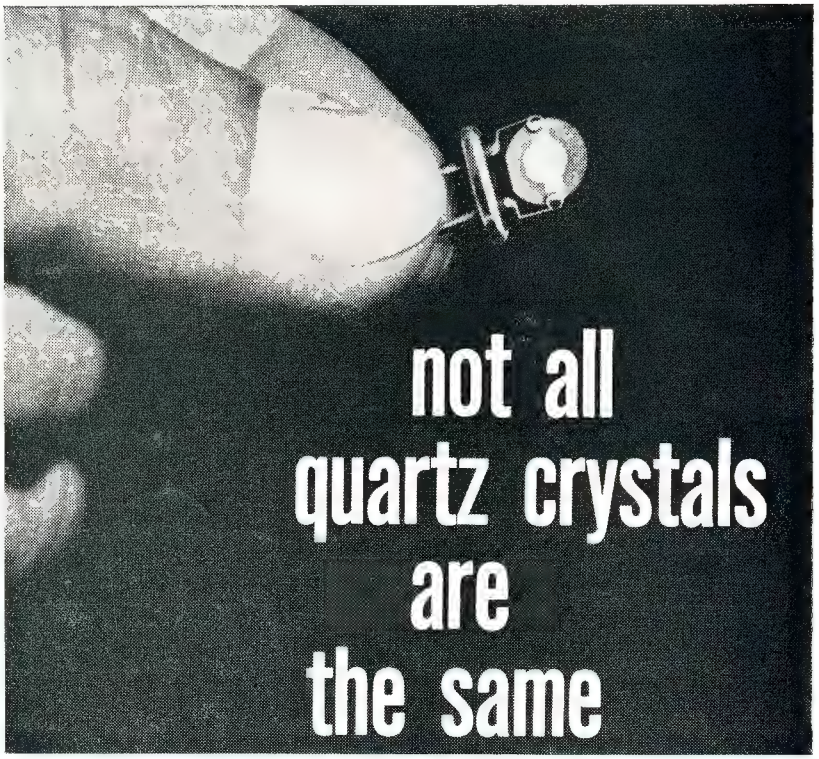
4.—Temperature stability: —64 cycles with 20°C. change in ambient (approx. 1 part in 10^6).

5.—Warm up: negligible.

6.—Output isolation: +80 cycles from 50 ohm termination to S/C (cable length 24").

7.—Supply rejection: 22.4 cycles per 100 mV. change in rail voltage.

Note.—The mixers and crystal oscillators will now be discussed in Part 4. These were previously promised for Part 3.



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HQ01

THE WORLD WITH A TRIANGLE

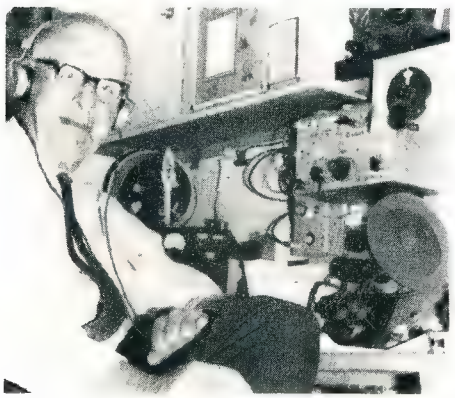
PART THREE

WAL SALMON,* VK2SA

[Part One appeared in "Amateur Radio, October, 1968; Part Two, April, 1969.—Ed.]

How many have tried to get directivity and gain from an antenna on 40 metres? If we decide to use a simple dipole the answer is orientation to get whatever we can in the desired direction. If we prefer a vertical, all that is left to do is to concentrate on lowering the radiation angle which is no mean feat in the majority of cases.

In the latter part of 1968 the author took a look at the facilities available for the construction of a two element directional antenna for 40 metres. If you are interested in the installation of a high tower and the purchase of a commerical 40 metre beam, don't read any more of this article.



The Author, VK2SA.

The reader might now refer to the triangular configuration Fig. 1 of April 1969 "Amateur Radio" (page 10). It will be seen that there is space available between the two 20 metre quads for the installation of an additional antenna. Thought was then given to the construction of a two element fixed array for 40 metres and it was decided to experiment with two driven loops with a phasing section to permit reversal of direction. Two loops were constructed, the top and bottom sections being 35 feet, and the vertical sections 30 feet, and when hoisted in the air the average distance apart of the horizontal top sections was approximately one-quarter wave. The bottom sections of the loops are brought closer together than one-quarter wave for convenience in feeding the array and are 12 feet from ground.

Consideration was then given to the method of feeding the loops and it was decided to use the same system as adopted for the 20 metre quads, namely, tapped loading coils and 300 ohm open t.v. line. Two coils of 23 turns wound on 1¼" plastic tubing and tapped at 10 turns were constructed and inserted in the southern corner of each loop. A g.d.o. check indicated a resonance of approximately 7.6 MHz. in each loop. Small tuning condensers were then mounted in metal waterproof boxes and mounted on wooden supports below the loading coils in each loop and both loops were then tuned to 7 MHz.

* 77 Flora Street, Kirrawee, N.S.W., 2232.

A phasing delay stub consisting of 34 feet of open wire 300 ohm t.v. line was then constructed by winding the t.v. line over a flat masonite board 2 feet by 15 inches. The stub was then mounted on the wall of a fibrolite shed

(continued on page 15)

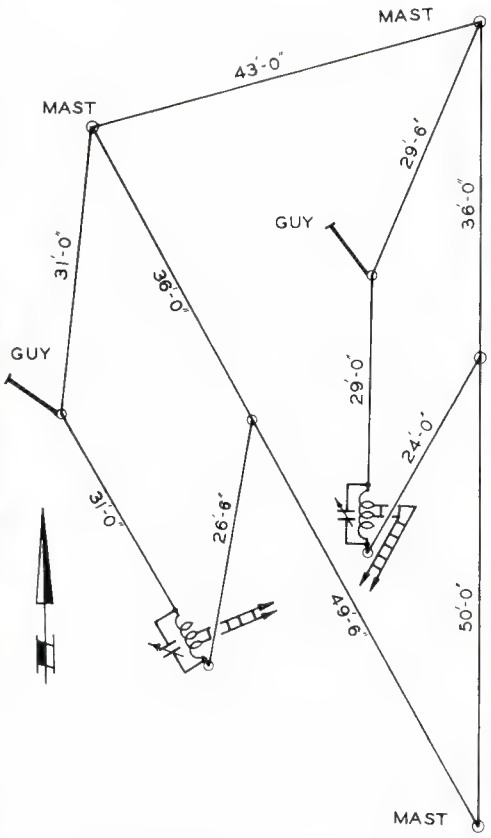
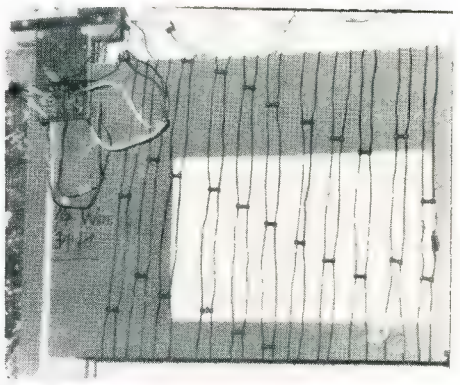


Fig. 1.—VK2SA's 40 Metre Loops.



Loop delay stub, 34 feet.

Loop tuning box and coil, 12 ft. from ground.

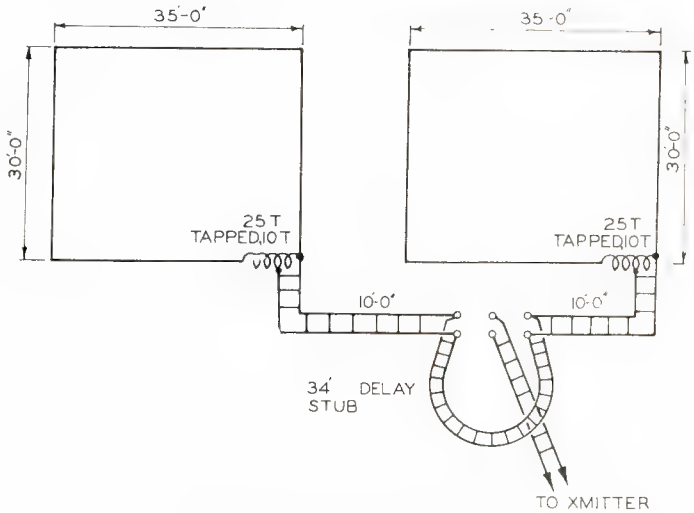


Fig. 2.—VK2SA's 40 Metre Driven Loops.
Note.—Drawing shows incorrect number of turns on coils Coils should be made of 23 turns, tapped at 10 turns.

VISIT TO POINT HICKS

Thirteen members of the Victorian Division made the 310-mile trip from Melbourne to place the first part of the Australian coast sighted by Captain Cook on the Amateur bands as a part of the Captain Cook Bicentenary celebrations.

All bands from 1.8 MHz. to 432 MHz. were operative at some time over the 18th to 20th April, something approaching 1,000 QSOs resulted. As one would expect, almost all of these were on the h.f. bands. Ideal conditions existed for both radio and weather.

Good results were obtained from all h.f. equipment. 1.8 MHz. and 14 MHz. were located on a site in view of the lighthouse, and the pressure on 14 MHz. was so great at times that the operators had to leave off for a while to let the QRM settle.

Although only six watts r.f. was available for 1.8 MHz., AX2, AX3 and AX5 stations were worked.

3.5 and 7 MHz. site was on the eastern side of the Cape and splendid results were obtained at all times. The 40 metre call-back after the broadcast was taken from here and went for over an hour.

It was attractive enough for a local in the form of a snake to pay us a visit at this stage and the tent was quickly vacated by personnel, but despite a thorough search he managed to get away.

Despite the inverted vee antenna, a G was worked on sideband on this band as well as other DX on 7 MHz.

21/28 MHz.: A beam was used on 21 MHz. and a whip for 28 MHz., and again good results. The site was actually on the beach on the eastern side.

V.h.f. was at the 14 MHz. site, but only limited results were obtained, mainly with the Swinburne College Radio Club who were active from National Parks in the area.

We were made welcome by the lighthouse keeper who hailed from Belfast and we were able to raise a GI from the same city, so that our host was able to talk back there. He showed plenty of interest in that QSO as well as other contacts.

Those who made the trip enjoyed the formal ceremony, and the start of the yacht race to Botany Bay, and would like to thank all those who gave us contacts as this was what the expedition was about. We were pleased to obtain a couple of contacts from Whitty, in Yorkshire, as this was the home port of the collier which was to become famous as H.M. Bark Endeavour.

QSL and certificates will be forwarded to all stations who contacted AX-3AWI/Portable at Point Hicks.

We certainly hope we will have the opportunity to work you all again from our home QTHs.

SOLID STATE EXPENSIVE?

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I.C. F.M. I.F. AMPLIFIER and DEMODULATOR KIT—see "A.R." June 1970. **Frequency**: 455 KHz. (nom.); **Sensitivity**: 12 uV. for 10 dB S/N (dev. 5 KHz., f. mod. 1 KHz.), 40 uV. for hard limiting. **Recovered Audio**: 100 mV. average for hard limiting; **Supply Voltage**: 8V. to 15V. d.c., positive or negative earth; **Bandwidth**: 16 KHz. with optional ceramic filter or determined by external filters; **Dimensions**: 4 cm. x 8 cm. fibre glass P.C. board. Complete kit less filter: **$9.80**; Wired and tested: **$12.80**. **Ceramic Filter CFP455E**: **$16.00**.

I.C. ONE-WATT AUDIO AMPLIFIER KIT—see "A.R." July 1970. **Power output**: 1W R.M.S. into 8 ohms; **Sensitivity**: Adjustable from 14 mV. to 200 mV. R.M.S. for full output; **Frequency Response**: 160 Hz.-4.5 KHz. or 160 Hz.-13 KHz.; **Design Supply Voltage**: 12V. D.C. (positive or negative earth); **Operating Voltage Range**: 6-13.5V. D.C.; **Input Impedance**: 8-35K ohm; **Dimensions**: 4 cm x 8 cm fibre glass P.C. board. **Complete kit** (less speaker): **$8.40**; Wired and tested: **$11.40.**

144 MHz. to 432 MHz. VARACTOR TRIPLER KIT.—Input: up to 40W. at 144 MHz. **Output**: up to 30W. at 432 MHz., depending on diode used; **Size**: rectangular box 11 x 7.5 x 3.2 cm. when assembled. **Complete kit** including metalwork bent and cut to size and ready for soldering, excluding diode: **$5.80**. **2N3632** transistor (unbranded) will give **13.5 W.** output when used as an amplifier on 144 MHz. or **10W.** output at 33% efficiency when used as a varactor tripler from 144 MHz. to 432 MHz.: **$7.00.**

All prices include sales tax and postage.

COMMELEC INDUSTRIES

P.O. Box 1, Kew, Vic., 3101. Phone (a.h.) 80-2957, 277-8295 (STD Code: 03)

N.S.W. Rep.: J. W. Rufus, 9 Bridge Road, Homebush, N.S.W., 2140. Phone (a.h.) 76-7133

An Integrated Circuit F.M. I.F. Strip

J. REYNOLDS, VK3ZMU*

The f.m. i.f. strip described was designed as an add-on unit to enable reception of frequency modulated signals on existing receivers without this facility as standard

THE last few years have seen a remarkable growth in the popularity of f.m. on the v.h.f. and u.h.f. bands. While this is largely due to the ready availability of commercial transceivers suitable for Amateur conversion, a realisation of the technical and practical advantages has also contributed.

While f.m. can be better than a.m. or s.s.b. above a certain threshold input signal-to-noise ratio, it is doubtful if this is a real advantage for Amateur purposes since we are generally more concerned with receiving weak signals than achieving a very high recovered signal-to-noise ratio. Potential for noise and interference improvement is a definite advantage but the practical advantages are probably more important. These include being able to run transistors and valves at their maximum ratings and being able to multiply to harmonically related bands without distortion. Only simple modulators are required, reducing the cost of equipment.

F.m. is by far the most suitable mode for use with active repeaters and translators. Repeaters demodulate the received signal to baseband and remodulate the transmitter with this demodulated signal. Translators use a heterodyne or multiplier system to change frequency between input and output.

Amplitude modulated systems such as s.s.b. and double sideband a.m. impose stringent requirements on system linearity. Complex gain control circuits are necessary to prevent overmodulation or intermodulation splatter due to the wide range of signal strengths encountered.

These requirements do not exist for a frequency modulation system. Indeed best performance is achieved if the signals are hard limited, resulting in constant amplitude signals from the limiters. Interference is less troublesome since the stronger signal prevails for a difference in signal strengths of greater than about 3 dB.

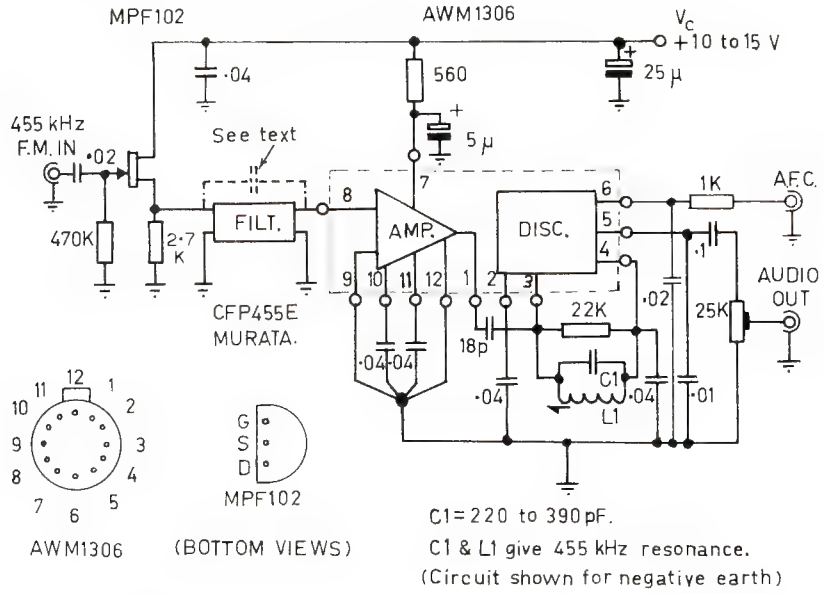
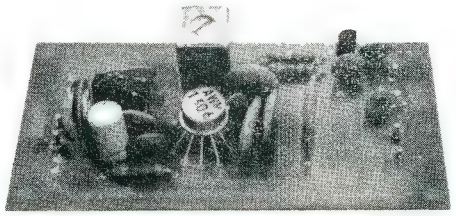


FIG.1 – F.M. IF-AMPLIFIER & DEMODULATOR CIRCUIT.



AUSTRALIS-OSCAR 6 SATELLITE

One of the best reasons for being able to receive f.m. is the future launch of Australis-Oscar 6. This is expected to be a hard limiting multi-channel f.m. repeater system. If all goes as planned the satellite will allow international Amateur communication on the v.h.f.-u.h.f. bands.

THE CIRCUIT

The circuit diagram (Fig. 1) shows a source follower (MPF102) followed by a high gain i.f. amplifier and f.m. discriminator. The high gain amplifier and discriminator are contained in the one integrated circuit, an AWM1306.

Signal input, taken from a suitable point after the mixer, is coupled to the gate of the source follower via a 0.02 µF. ceramic capacitor. The high value gate resistor (470K ohm) ensures that the f.m. i.f. strip does not disturb the normal operation of the receiver by detuning or damping tuned circuits.

The source resistor of the source follower stage is such as to give an output impedance of about 1.5K ohm, a suitable value for matching into the following filter or integrated circuit (see later).

The circuit of the IC is given in Fig. 2. The AWM1306, made in Australia by A.W.A., is by far the best amplifier-discriminator available today. Reference to Fig. 2 shows that the

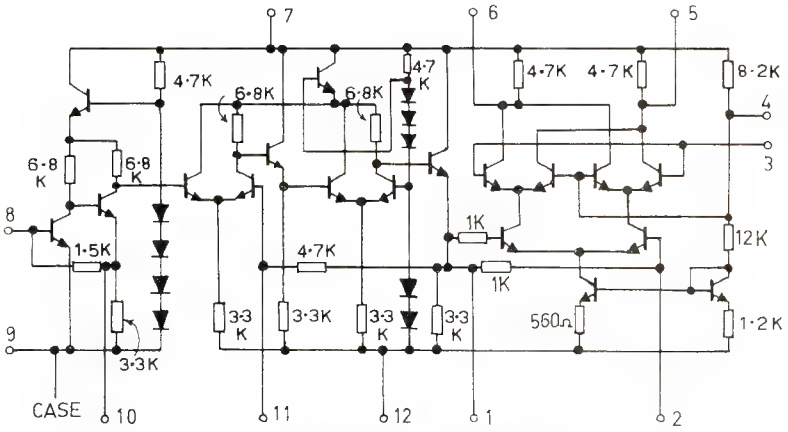


FIG.2 – SCHEMATIC OF AWM1306

* 4 Balmoral Avenue, Kew, Vic., 3101.

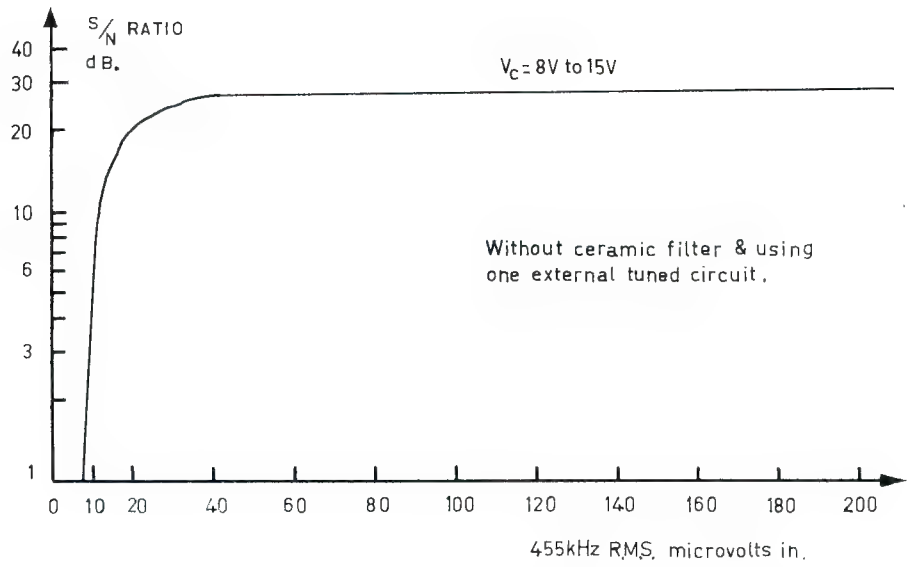


FIG. 3 – F.M. IF-AMPLIFIER & DEMODULATOR CHARACTERISTICS (SIGNAL)

AWM1306 consists of a cascade of two common emitter stages followed by a differential amplifier, emitter follower, differential amplifier and second emitter follower. I.f. output is taken via lead 1 from the emitter follower stage to lead 3, the input of the discriminator section. Push-pull audio output is taken from pins 5 and 6 or single ended output from either. L1/C1 is a normal i.f.t. resonant at the i.f. frequency. The 22K ohm resistor across L1/C1 broadens the frequency response of the discriminator.

Audio output of approximately 100 mW. r.m.s. is coupled via a 0.1 μF. capacitor to the 25K ohm potentiometer. If required, this pot. may be used to set the level of output of the f.m. demodulator so that it is equal to that from other detectors in the receiver.

FILTERS

Provision has been made on the circuit board for a Murata ceramic block filter, type CFP455E. These filters provide a 6 dB. bandwidth of 16 KHz. and a shape factor of 2 (6/50 dB.). An i.f. bandwidth of 16 KHz. is adequate for most f.m. transmissions.

If it is desired to use the existing filter circuitry of a receiver the ceramic filter may be replaced by a 0.02 μF. capacitor. Fig. 5 shows the possible connecting points in a typical receiver. Point A should be used with the ceramic filter or when maximum bandwidth is required. Points B, C and D can be used depending on the degree of selectivity required.

The bandwidth of a narrow band f.m. signal is equal to that of an a.m. signal, so that existing filters in an a.m. receiver are suitable. However for wideband f.m. it will be difficult to achieve the necessary compromise between bandwidth and interference rejection. It is for this application that the ceramic block filter was developed.

When used with valve receivers it is **essential** that any coupling to a valve anode be via a 33K ohm resistor. This is necessary to prevent capacitor charging current destroying the field effect transistor. If the 0.02 μF. 50v. coupling capacitor specified in Fig. 1 is used an additional capacitor of **no more than** 0.002 μF. and of adequate voltage rating **must** be used in series. This is to reduce the d.c. voltage across the 0.02 μF. capacitor to below its voltage rating.

CONSTRUCTION

The i.f. strip is constructed on a 4 cm. x 8 cm. fibre glass printed circuit board containing the whole of circuit 1 including filter. Connections to the board are made via small pins. Provision has been made for either positive or negative earth as determined by two straps. D.c. output may be taken from pin 6 for automatic frequency control or reception of f.s.k. signals.

PERFORMANCE

Fig. 3 shows the variation of output signal-to-noise ratio with input voltage at the gate of the FET. Fig. 4 shows the variation of audio output with input voltage for various supply voltages.

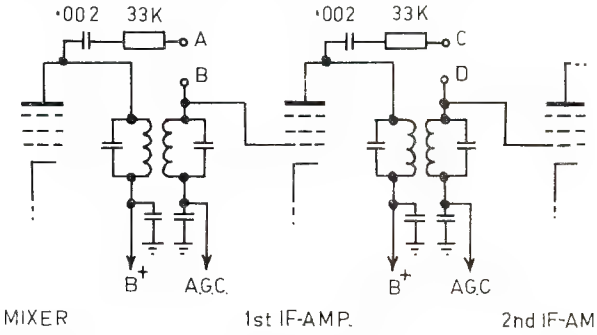


FIG. 5 – TYPICAL CONNECTION POINTS

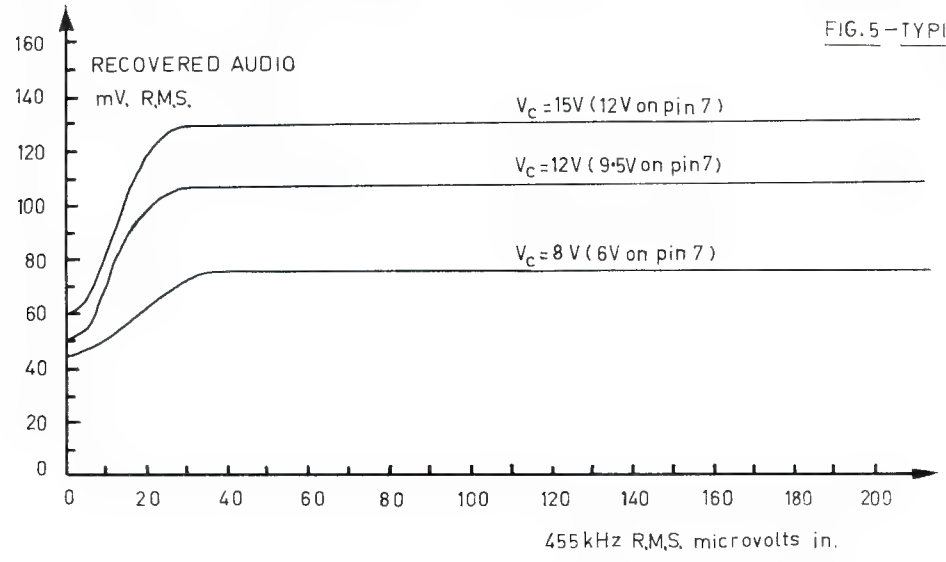


FIG. 4 – F.M. IF-AMPLIFIER & DEMODULATOR CHARACTERISTICS (AUDIO).

Typical performance figures are:

Nominal operating voltage: 12v.

Sensitivity (f = 455 KHz., dev. = 5 KHz., f_M = 1 KHz.): 12 μV. for 10 dB. S/N.

Full limiting: 40 μV.

Audio output at full limiting: 105 mV.

Audio distortion:
(400 μV. input) 3%.
(10 mV. input) 2.5%.

Operating voltage range: 8-15v.

Useful frequency range: up to 2 MHz.

ALIGNMENT

Adjust L1 for best audio quality or for zero volts d.c. between leads 5 and 6 with a strong signal at the desired frequency applied. Set the output level potentiometer as required.

On the Concentration of Ferric Chloride

Information for Etching Printed Circuit Boards

MORTON P. DAVIS,* VK3ANG

The following information is presented for the benefit of the increasing number of Amateurs who are etching their own printed circuit boards using ferric chloride.

A table is given, showing the basic data, and examples of the necessary calculations are provided.

1	2	3	4
A% by weight	H% by weight	S.G.	W gm/litre
20.00	33.33	1.1838	52.9
22.00	36.66	1.2043	60.5
24.00	39.99	1.2254	68.6
26.00	43.33	1.2473	76.9
28.00	46.66	1.2699	85.5
30.00	49.99	1.2934	94.5
32.00	53.32	1.3176	103.8
34.00	56.66	1.3426	113.7
36.00	59.99	1.3681	124.2
38.00	63.32	1.3941	135.4
40.00	66.66	1.4200	147.7

A% = Anhydrous compound weight e.g. grams solute per 100 grams of solution.

H% = hydrated compound weight per cent.

S.G. = specific gravity of solution at 20°C.

W = water displaced by anhydrous solute, grams/litre.

1 lb. = 453.6 gm.

1 litre = 1.76 pints.

Example of Calculations for Hydrated Ferric Chloride ($Fe Cl_3 . 6H_2O$).

Required S.G. = 1.38.

By linear interpolation in columns 2 and 3, an S.G. of 1.38 requires a value of H% = 61.51%.

The weight of 1 litre of solution of S.G. = 1.38 is 1380 gm.

61.51% of 1380 gm. = 850 gm.

Therefore, take 850 gm. of hydrated ferric chloride and make up to 1 litre,

or 500 gm. made up to 588 ml.

or 500 gm. made up to 1.03 pints.

Example of Calculations for Anhydrous Ferric Chloride ($Fe Cl_3$)

Required S.G. = 1.38.

(a) By linear interpolation in columns 1 and 3, an S.G. of 1.38 requires a value of A% = 36.92%.

The weight of 1 litre of solution of S.G. = 1.38 is 1380 gm.

36.92% of 1380 gm. = 509 gm.

Therefore, take 509 gm. of anhydrous ferric chloric and make up to 1 litre,

or 500 gm. made up to 982 ml.

(b) By using the values of W in column 4 we can now calculate how much water must be added to any weight of solute to produce the required specific gravity.

By linear interpolation in columns 1, 3 and 4, an S.G. of 1.38 requires a value of A% = 36.92%, as above, which leads to a value for W = 129.4 gm./litre.

Therefore, to produce 1 litre of solution of S.G. = 1.38, take 509 gm. of anhydrous ferric chloride and add 870.6 ml. of water,

or to 500 gm. add 855 ml. of water. This is approximately 1 lb. of anhydrous ferric chloride added to 1½ pints of water.

The range of specific gravity of solution suitable for efficient etching is 1.32 to 1.40, with an optimum value of 1.38, and if heated, the temperature should not exceed 130°F.

I acknowledge the assistance given by Mr. W. Mare, of the Cancer Institute, Melbourne.

* 144 Tramway Pde., Beaumaris, Vic., 3193.

☆

ELNA CAPACITORS

Reduced prices have been announced covering a wide range of Elna electrolytic capacitors. Distributed in Australia solely by Soanar Electronics Pty. Ltd., the Elna range includes "Greencap" and "Ceramic" capacitors, brochures for which are available on request from Soanar head office, 30-32 Lexton Rd., Box Hill, Vic., 3128.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to:

EDITOR "A.R.,"
P.O. BOX 36,
EAST MELBOURNE,
VICTORIA, 3002

WORLD WITH A TRIANGLE

(continued from page 11)

midway between the two loop coils. A double throw double pole switch was installed in the shed and two ten foot 300 ohm feed lines installed to connect the loop coils to the phasing stub. Sixty feet of 300 ohm open wire line from the centre contacts of the d.p.d.t. switch to the shack transmitter completed the installation.

A point which I emphasise is the method of tuning the two loops which must **not** be checked by the g.d.o. with any **feed line connected to the loop loading coils.**

With regards to results, on 40 metres, I have made a record in the log of all comments regarding my signal, both on c.w. and s.s.b., and remarks like "You are the best signal on the band at present" and "Your signals are the best ever from 2SA" are common. Tests have been carried out with the United States and VK6 and VK5, and reports of 2 S units change on reversal of the phasing switch have been frequent. A report of 589 on c.w. was given by HP1IE and SSB7 from HS3AL.

If you decide to try the antenna and put it up higher than mine, the results should be fantastic.

— . . . —

FEEDBACK

Re the article "A Hub or Tri-band Spider Quads," "A.R.," March 1970, p. 12-15. One point that was not made clear in this article is that "Spider Quads" must be "boxed" to increase the rigidity of the structure and to make it look as elegant as possible.

Boxing is achieved by connecting a number of the points, at which the loops are connected to the spreaders, together by means of non-conducting line such as 100 lb. breaking strain nylon fishing line, or a suitable woven line. These lines should run horizontally between the tie points and if the loops are attached directly to the spreaders will be identical to the desired spacing.—VK3ASC.

☆

BAIL ELECTRONIC SERVICES S.A. AGENT

Yaesu sole agent in Australia, Bail Electronic Services, have appointed Farmers Radio Pty. Ltd., 257 Angas St., Adelaide, as their S.A. representative; telephone 23-1268. Max Farmer (VK5GF) was one of the earliest manufacturers of two-way radio in South Australia, and has developed special p.a. equipment for use in tourist buses. Farmers' appointment, coupled with N.S.W. rep. Sandy Brucesmith, now gives three-State coverage for Bail Electronic Services.

— . . . —

EDDYSTONE BROCHURES

Technical brochures with full specifications of the range of Eddystone v.h.f.-u.h.f. communications receivers are now available from the sole Australian agent: R. H. Cunningham Pty. Ltd., 608 Collins St., Melbourne, 3000.

VK-ZL-OCEANIA DX CONTEST, 1969 RESULTS

Our thanks to all who helped make this part of the Cook Bicentenary Celebrations the success it was. Everyone who submitted a log will receive a momento. Certificate and trophy winners will receive their awards direct while others will receive a "Participation Card" via QSL Bureaux.

While the greatest number ever of logs was received, more were expected from North America and Europe. It is disappointing that in spite of special direct publicity to DX Clubs, not one entry for this section was received. A reasonable critical comment in overseas logs was "Where were the ZL4 stations?"

While there are numerous exceptions, in general the easiest logs to check came from Japan with U.S.S.R. as runner-up. Many logs had to be rescored as results will show but in general, logs were good.

In these results you will find the calls of many of the world's premier contest operators as prize winners, but the awards were structured in an endeavour to make provision for everyone. I hope we have been able to strike a balance to the satisfaction of all.

—Jock ZL2GX.

AUSTRALIA

C.w. Section

Call Sign	80	40	20	15	10	Total
VK1GD	—	875	3455	1600	—	5930
VK2APK	155	1760	8565	7115	4405	22000
VK2EO	520	1450	4410	5950	5945	18275
VK2VN	215	1305	2675	4745	4065	14005
VK2QL	—	675	1290	1630	3875	7470
VK2HW	—	-	2420	—	—	2420
VK2GW	—	2290	—	—	—	2290
VK3KD	-	-	4915	1090	2105	8110
VK3AXK	—	—	—	8050	—	8050
VK3APN	380	2910	2900	—	—	6190
VK3XB	190	—	—	—	5965	6155
VK3HE	—	—	2720	220	—	3740
VK3OP	220	1555	—	—	—	1775
VK3RJ	565	-	—	—	485	1050
VK4FH	—	—	5155	5385	4635	15175
VK4VX	—	—	—	10090	—	10090
VK4UA	—		6300	—	—	6300
VK4XJ	—	—	—	—	5425	5425
VK4EZ	—	—	4165	—	—	4165
VK4NQ	—	—	3375	—	—	3375
VK4GU	-	—	3365	—	—	3365
VK4SF	—	—	1155	—	—	1155
VK4RF	Check					
VK5MY	—	520	2520	900	2760	6700
VK5NO	—	5170	—	—	—	5170
VK5BS	—	—	245	—	—	245
VK6HJ	—	—	6730	2365	4280	13375
VK6CW	—	—	3915	—	—	3915
VK7GK	680	1345	6050	2880	2860	13815
VK7CH	—	-	5930	665	—	6595
VK8HA	—	720	2750	5870	3550	12890
VK9KS	—	—	1425	—	—	1425

Phone Section

Call Sign	80	40	20	15	10	Total
VK1GD	—	—	3330	—	155	3485
VK2KM	510	3450	11610	6610	5460	27820
VK2APK	545	2155	10510	5640	4485	23335
VK2XT	—	495	9640	8140	4510	22785
VK2SG	—	—	12725	—	—	12725
VK2WD	—	—	—	3035	2690	5725
VK2AKV	430	55	1415	650	2655	5205
VK2ASZ	220	105	1330	1115	215	2985
VK2ABC	—	—	2920	-	—	2920
VK2BNK	510	—	2160	—	—	2670
VK2EB	—	—	2350	—	—	2350
VK2NS	805	—	—	—	—	805
VK3AMK	535	—	6990	1980	3425	12930
VK3VK	—	—	7290	2805	1345	11440
VK3XB	900	—	—	—	7335	8235
VK3ARX	—	—	7615	—	—	7615
VK3QV	—	—	—	—	5910	5910
VK3SM	—	—	—	4885	—	4885
VK3ASQ	190	55	1510	750	855	3360
VK3BCL	655	—	—	—	—	655
VK3ASV	210	—	55	—	—	265
VK4KS	—	—	13575	3780	—	17355
VK4LT	435	—	6345	3175	4710	14665
VK4SD	—	—	11620	—	—	11620
VK4VX	-	—	—	—	7755	7755
VK4SF	-	—	7735	—	—	7735
VK4EQ	350	55	2085	3030	2095	7615
VK4XY	—	—		2785	3280	6065
VK4DO	—	—	5100	—	—	5100
VK4TZ	—	—	3540	—	-	3540
VK4GU	—		2260	—	—	2260
VK4BG	—	—	2105	—	—	2105
VK4UA	-	—	2000		—	2000
VK4QA	Check					
VK5FO	—	525	7040	3235	2910	13710
VK5WP	—	—	3735	4010	3990	11735
VK5ZZ	—	—	—	1635	—	1635
VK5ZX	—	—	1020	—	—	1020
VK6CT	370	—	2995	4035	7010	14410
VK6CW	430	1135	5965	2005	3230	12765
VK7GK	660	1055	11670	4365	3930	21680
VK7AZ	—	325	10790	4975	1395	17485
VK7JV	—	—	4005	4025	2805	10835
VK7BM	725	—	—	—	—	725
VK8CM	—	—	1900	2490	1180	5570
VK8AZ	-	—	1100	—	—	1100
VK9RY	535	—	230	4350	1575	6690
VK9KS	-	-	3040	2340	—	5385
VK9XI	—	—	770	2280	1005	4055
VK9KY	—	—	3085	—	—	3085
VK9DR	—	—	305	770	—	1075

Individual Band Scores

Band	Phone		C.W.	
All Bands	VK2KM	27820	VK2APK	22000
	VK2APK	23335	VK2EO	18275
	VK2XT	22785	VK4FH	15175
10 mx	VK4VX	7755	VK3XB	5965
	VK3XB	7335	VK2EO	5945
	VK6CT	7010	VK4FH	4635
15 mx	VK2XT	8140	VK4VX	10090
	VK2KM	6610	VK3AXK	8050
	VK2APK	5640	VK2APK	7115
20 mx	VK4KS	13575	VK2APK	8565
	VK2SG	12725	VK6HJ	6730
	VK7GK	11670	VK4UA	6300
40 mx	VK2KM	3450	VK5NO	5170
	VK2APK	2155	VK3APN	2910
	VK6CW	1135	VK2GW	2290
80 mx	VK3XB	900	VK7GK	680
	VK2NS	805	VK3RJ	565
	VK7BM	725	VK2EO	520
Special 80 mx only:				
	VK2NS	805	No Entry	

VK S.w.l. Section

WIA-L2022	13145	WIA-L5106	2575
WIA-L2259	10740	WIA-L6021	24070
WIA-L2161	8305	WIA-L6101	3250
WIA-L3395	9305	WIA-L6142	3120
WIA-L3405	3505	WIA-L7031	6930
WIA-L3055	2780	WIA-L7043	6180
WIA-L4144	11370	BERS195	5410
WIA-L4104	3670	WIA-L7051	2400
WIA-L5088	17600		

S.w.l. Medallion won by WIA-L6021.

NEW ZEALAND

C.w. Section

Call Sign	80	40	20	15	10	Total
ZL1AJU	55	2420	9925	8305	4475	25180
ZL1AH	55	1705	6890	7980	3450	20080
ZL1IL	—	55	8380	7165	3595	19195
ZL1HV	—	530	7460	3565	2920	14475
ZL1AMO	-	—	3010	9305	—	12315
ZL1HW	—	—	6820	1590	3645	12055
ZL1TZ	—	—	7245	1195	2565	11005
ZL1AFW	—	—	3865	4275	2715	10855
ZL1AIZ	135	1025	4965	1680	2375	10180
ZL1BDN		—	5705	—	—	5705
ZL1NX	—	—	3385	—	—	3385
ZL1IB	—	—	1785	110	1365	3260
ZL1QW	-	—	450	—	—	450
ZL1RD	Check					
ZL1FE	Check					
ZL2CD	100	1995	5395	5985	3060	16535
ZL2GX	110	1830	7400	4225	—	13565
ZL2BCO		650	9850	2540	55	13090
ZL2OM	—	—	10220	—	—	10220
ZL2LB	Check					
ZL3GQ	645	3350	10280	6555	5435	26265
ZL3IS	—	—	—	—	5145	5145
ZL3CP	-	—	3945	—	—	3945
ZL4OP	Check					
ZL4GA	Check					
ZL4GR	Check					

Phone Section

Call Sign	80	40	20	15	10	Total
ZL1HW	—	—	6675	2020	4690	13385
ZL1AXB	-	—	13380	—	—	13380
ZL1AKY	595	590	3310	1430	3920	9845
ZL1AIZ	540	840	3340	1815	2445	8980
ZL1TZ	—	—	8350	—	—	8350
ZL1AWF	-	—	2835	5435	—	8270
ZL1AGO	—	4345	—	—	—	4345
ZL1NX	—	-	2655	1190	—	3845
ZL1AFQ	—	—	3815	—	—	3815
ZL1BDW	-	—	1565	1905	—	3470
ZL1QW	—	-	-	2240	—	2240
ZL1BHO	995	—	—	—	—	995
ZL1RD	Check					
ZL2ACP	-	—	8365	5040	—	13405
ZL2GX	640	1400	5995	3185	—	11220
ZL2AVY	—	—	—	4730	—	4730
ZL2OM	-	—	2120	—	—	2120
ZL2AYI	140		690	880	—	2085
ZL2AWH	1265	—	-	-	—	1265
ZL2GJ	1030	—	—	—	—	1030
ZL2AOP	1015	—	—	—	—	1015
ZL2CD	735	—	-	-	—	735
ZL2DM	665	—	—	—	—	665
ZL2BCX	Check					
ZL2ATE	Check					
ZL2QK	Check					
ZL3NS	—	—	10870	—	—	10870
ZL3IS	—	—	—	—	5115	5115
ZL4BO	—	—	5190	—	—	5190
ZL4NX	1075	—	—	—	—	1075
ZL4NH	335	—	—	—	—	335
ZL4OP	Check					

Individual Band Scores

Band	Phone		C.W.	
All Bands	ZL2ACP	13405	ZL3GQ	26265
	ZL1HW	13385	ZL1AJU	25180
	ZL1AXB	13380	ZL1AH	20080
10 mx	ZL3IS	5115	ZL3GQ	5435
	ZL1HW	4690	ZL3IS	5145
	ZL1AKY	3920	ZL1AJU	4475
15 mx	ZL1AWF	5435	ZL1AMO	9305
	ZL2ACP	5040	ZL1AJU	8305
	ZL2AVY	4730	ZL1AH	7930
20 mx	ZL1AXB	13380	ZL3GQ	10280
	ZL3NS	10870	ZL2OM	10220
	ZL2ACP	8365	ZL1AJU	9925
40 mx	ZL1AGO	4345	ZL3GQ	3350
	ZL2GX	1400	ZL1AJU	2420
	ZL1AIZ	840	ZL2CD	1995
80 mx	ZL2AWH	1265	ZL3GQ	645
	ZL4NX	1075	ZL1AIZ	135
	ZL2GJ	1030	ZL2GX	110
Special 80 mx only:				
	ZL2AWH	1265	No Entry	

ZL S.w.l. Section

ZL149	16265
ZL190	3550
ZL380	700

OVERSEAS

C.w. Section

Note. -Multi-op. stations indicated by (K) after call sign

Europe

DM2BJD	4264	HA5KFZ	715
DM2AND	3048	HA5DA	312
DM4YEL	848	HA5KDW	44
DM3SBM	272	HA5FH	7
DM2BBK	72	I1ASE	1515
DM2ATL	2	PA0WAC	Check
DM2ATD	Check	PA0??	Check
DM2CHM	Check	LA1K	1309
DM3OC	Check	LA5HE	128
DM3XUE	Check	LA9YF	48
DL7AA	5120	LA1H (K)	3100
DL7HU	3550	OK2RZ	3672
DJ6RX	3302	OK2QX	1080
DJ5QK	4	OK1STU	450
DL1RB	Check	OK2BIP	288
DJ0TA	Check	OK2BCI	270
EA2IA	160	OK1AFN	192
EA2HR	32	OK1DLM	186
F9DW	72	OK1TA	180
F8TQ	70	OK3CFL	144
G5RP	2244	OK3CIR	135
G5WP	1408	OK2SFS	125
G3VW	180	OK1KYS	120
GC5AGA	30	OK3UL	84
GM3CFS	450	OK3CCC	72

Europe (continued)

OK1ABB	72	UQ2CC	540
OK3CHX	64	UQ2KAA	144
OK1BY	60	UQ2MU	120
OK2PAF	51	UQ2PG	4
OK2BFS	48	UQ2KCT (K)	949
OK1AMI	42	UQ2KDZ (K)	768
OK2BOB	40	UR2FU	60
OK2ABU	18	UB5QR	799
OK2BBJ	18	UY5RV	730
OK2PAE	16	UB5WE	672
OK2BDE	8	UB5RR	649
OH5UX	2944	UB5KAC	621
OH2BAH	576	UB5DW	196
OH2OW	490	UB5KAW	52
OH5SE	340	UT5IY	50
OH3MM	48	UY5OB	48
OH7NW	18	UT5BU	42
OH5VT	12	UB5OE	40
OH2BHU	2	UT5HS	24
OH6NH	Check	UB5ES	8
OZ1LO	5270	UT5KKM	Check
OZ4PM	1422	UB5KID (K)	1616
OZ5DX	1257	UB5KAS (K)	1512
OZ5CY	105	UB5KFF (K)	810
OZ7XG	8	UB5KDS (K)	620
OZ3Q	Check	UB5KIW (K)	203
OZ4H	30	UB5KAB (K)	90
ON4XG	1300	UA1DZ	6000
SM7ANB	3537	UW1KUA	1638
SM0BYG	1760	UW1CX	1496
SM3CXS	855	UA1FA	560
SM3DVN	207	UA1LL	315
SM6CKU	144	UA1DH	160
SM3EWB	126	UA1ZL	126
SM3BUS	48	UA1NA	18
SM3ARE	Check	UA1DI	6
SM7TV	Check	UA3UJ	3024
3Z3AIJ	2037	UW3EH	754
3Z5ATO	135	UA3NP	468
3Z2AOB	114	UW3HV	384
3Z8HR	6	UA3JD	360
3Z2AEO	Check	UA3RH	234
YU3EY	2016	UV3GW	189
YU1BCD	1480	UA3OL	125
YU1SF	2	UA3RR	90
4U1ITU	64	UV3TA	64
LZ2DC	473	UA3GO	40
LZ1KRB	30	UV3MM	24
LZ1KWF	8	UV3AA	8
LZ2KWR (K)	352	UA3EU	2
LZ1KAA (K)	260	UA3KZO (K)	16
LZ1KPG (K)	216	UW3UG	Check
UO5AP	336	UV3BG	Check
UO5RO	324	UA3JQM	Check
UD6AM	960	UA4KHA	360
UF6LA	726	UA4IY	256
UF6DZ	64	UW4IK	135
UG6JJ	76	UA4KHW (K)	828
UP2PA	352	UA4KWP (K)	399
UP2ER	140	UW6LC	162
UP2OQ	132	UA6CP	140
UP2AG	56	UA6KOD (K)	3432
UP2BV	56	UA6KAE (K)	1572
UP2KBA	5	UC2WJ	357
UP2KCB (K)	400	UC2CY	72
UP2KDB (K)	259	UC2WP	44
UQ2GW	572		

Asia

JA1FGB	6293	JA0CHL	672
JH1AWI	1995	JA0BES	414
JH1WIX	1843	JA0AJH	390
JA1AFF	1170	JA0YBO	90
JH1FDP	1152	JA0EVJ	60
JA1JQY	852	UW9PT	3525
JH1GMP	480	UA9FJ	308
JA1LZR	470	UW9AT	231
JA1PNV	296	UW9OP	203
JA1SMA	96	UW9WB	119
JH1DMH	90	UA9KHL (K)	360
JA2HNP	1827	UA0MX	2256
JA2AYC	312	UA0FR	1258
JA3DXD	4648	UA0KCA	784
JA3HTT	507	UW0UQ	696
JA3QOG	369	UW0IW	572
JA3AVO	16	UA0ML	560
JA4BJO	8534	UA0KZB	528
JA4IO	4968	UA0MI	500
JA4SZ	1615	UA0ZB	490
JA4AQR 5	1836	UA0ZK	481
JA5NC	108	UA0LEB	194
JA5IU	70	UV0BB	Check
JA6TQ	621	UA0KAD	Check
JA6GPR	572	UA0BS	Check
JA6ACZ	40	UA0KFG (K)	9780
JA7CDU	7175	UA0KZD (K)	2350
JA7FUJ	580	UL7BG	980
JA7FWT	8	UL7GW	689
JA8BXC	580	UL7JG	258
JA8CSS	486	UL7JE	120
JA8BB	27	UL7KAA (K)	612
JA8AQZ	18	UH8DC	95
JA8GR	8	UH8BO	72
JA9CAF	3591	UI8KBA	140
JA9AG	3332	UI8AI	8
JA9BKU	882	UJ8KAA	1692
JA0ADY	5664	UJ8AQ	33
JA0ED	1007	UM8FM	154

South America

CE2CR	234

Oceania

KH6IJ	15525	CR8AI	2890

Africa

ZS2A	340	ZS6D	32

North America

KZ5II	175	W5WZQ	11286
KZ5NW	168	W3JXS/5	6090
VE3BWY	2360	WA5VSL	273
VE3EWY	2250	W5OJZ	57
VE3GCO	528	WA6EPQ	16324
W1EVT	8580	W6RGG	10842
W1BIH	6120	W6DGH	3276
WA1FHU	880	K5MHG/6	1278
W1FBY	364	K6HPZ	836
W1YYM	30	W6CLM	528
W1LVQ	21	K6AHV	332
W3NU	10235	W6ISQ	640
W3GHD	1264	W7IR	14112
W3TV	552	WA7CGR	33
W3QOR	144	W8VSK	1504
W4NBV	8470	W8YGR	720
K4KQ	3948	W9IHN	2750
K4IEX	2180	W9YEG	300
K4YXJ	1740	W0TDR	5760
K4KJN	1344	WA0KDI	1520
W4UHI	1284	K0GSV	192
W4JUK	780	WA0EMS	80

Phone Section

Europe

CT1WB	816	ON5MG	432
DJ4LK	5486	SM0MC	2592
DL7HU	5434	SM7AZL	2210
DL7AA	4818	SM0BYG	1185
EA1IY	700	SM3EP	448
F9RM	1344	SM7CSN	297
F9YZ	864	SM3CXS	288
F8RU	224	SM7CGY	Check
F9KP	210	SM7CPI	Check
F3II	196	3Z8AJK	2070
G3NMH	4680	SP3PL	858
G3PHO	1050	3Z9BLF	40
G3JVJ	64	YU3EY	567
GW3NNF	784	4U1ITU	2220
HA5AM	90	UA2KBD	174
HB9UD	288	UA3FF	3123
I1AA	2286	UW3EH	420
I1KBT	160	UW3IN	304
JW7UH	100	UV3FD	161
PA0INA	270	UV3MM	50
LA5HE	182	UA3KND (K)	2520
LA9YF	248	UA4RZ	612
LA1H (K)	1616	UW4HW	Check
OE2EGL	4400	UW6LC	704
OK1LM	1020	UA6KOD (K)	2502
OK2DB	252	UP2KTU	405
OK2BOB	140	UP2PA	273
OK2ABU	6	UQ2KDZ	836
OH5SE	5980	UR2DL	12
OH5VT	224	UB5WE	5336
OZ4FA	5325	UB5SR	620
OZ1LO	2436	UB5FG	217
OZ6MI	1155	UT5AM	204
OZ4IA	144	UT5KTH (K)	3424
OZ7DX	54	UB5KAS (K)	1995
OZ1LG	40	UT5KKM (K)	216
OZ5CI	30	UB5KIW (K)	48
OZ3KE	20	UO5RO	858
OZ5JR	24	UD6HB	160
OZ1TD	2	UF6KPA	102
OZ3Q	Check	UF6KPE	18
ON4XG	990	UG6KAA	280

North America

HP1JC	4872	W4AXE (K)	29120
KL7EQG	432	K5FHL	2499
KP4CL	1650	WA5VSL	395
KZ5AT	639	W5OJZ	350
KZ5II	108	K6AN	8584
VE7SV	2640	W6DGH	3500
VE3BWY	1020	WA6EPQ	2380
VE7IQ	132	K6YFF	1009
W1BIH	1309	K6AHV	396
W1PYM	970	W6CLM	4
W2FCR	4623	W7BJ	2527
K2BQO	4416	W7ETZ	1692
W3TLN	4564	K7RLS	847
W3TV	3248	WA7JRY	210
W3LTU	1166	W8KIT	8435
W3GHD	484	W8GUZ	896
W4NBV	10108	W8BJ	8
W4ORT	3423	W9IHN	460
K4MG	2478	WA0EMS	5483
W4DQD	988		

Asia

EP2BQ	7134	JA2IYJ	930
HL9UZ	184	JA2EDC	888
KR6TAB	620	JA2NNC	730
KR6FT	176	JA2MGG	78
OD5BA	60	JA3USA	7731
VS6AL	12485	JA3EVZ	1160
9M2DQ	9480	JA3LXU	1045
9V1PM	520	JA3HTT	486
JA1KSO	22632	JA3YEK	33
JH1FLR	18611	JA4XW	3276
JA1UQP	3965	JA4ERX	2066
JA1STN	3570	JA4FUQ	1872
JH1GNL	1677	JA4FM	1275
JA1UOC	1070	JA4FHE	1032
JH1BLX	464	JA4IFM	168
JA1WWY	216	JA5IU	480
JH1DMN	176	JA4AQR/5	470
JH1FTJ	12	JA5CIW	369
JA2HNP	1232	JA6AD	13510

Asia (continued)

JA6DCE	1000	JA8BXC	1026
JA6CRA	510	JA8FCG	432
JA6AZV	225	JA8FIZ	36
JA6ACZ	128	JA9AG	11470
JA6PY	8	JA9FS	2508
JA7CDV	11690	JA0ADY	3534
JA7BSK	930	JA0YAW	1352
JA7GQB	102	JA0FMB	360
JA8BB	2527		

South America

CP1GN	1122	PY4KL	495
CP5FB	945	PY2EWL	24
OA4NLM	828	YV4IQ	2640
PY3APH	864	YV1YC	1870

Africa

ZS2A	1806	CR6LV	522
9J2GJ	301	CR7IZ	154
CR6LX	528		

Oceania

DU1FH	33264	VR1L	30822
KH6IJ	28106	YB1GM	1176
KH6GMP	16912	YB0AAC	186
KH6GKI	3330	5W1AS	2793

Transmitting Awards

Winner to receive Silver-mounted Shield and Bicentenary Medallion

Runner-up to receive Cook Bicentenary Medallion

	Winners		Runners-up	
	Phone	**C.W.**	**Phone**	**C.W.**
Nth. America:				
	W4NBV	WA6EPQ	K6AN	W7IR
Sth. America:				
	YV4IQ	CE2CR	YV1YC	——
Oceania:				
	DU1FH	KH6IJ	VR1L	CR8AI
Asia:				
	JA1KSO	JA4BJO	JA1FLR	JA7CDU
Africa:				
	ZS2A	ZS2A	CR6LX	ZS6D
Europe:				
	OH5SE	UA1DZ	DJ4LK	OZ1LO

Band Awards

40	K6AHV	W7IR	K6AN	WA6EPQ
20	VR1L	WA6EPQ	DU1FH	KH6IJ
15	KH6IJ	KH6IJ	VR1L	WA6EPQ
10	JH1FLR	W6ISQ	VR1L	JA6TQ, W7IR WA6EPQ

U.S.S.R. Club Station (c.w. only): UA0KFG, 1st; UA6KOD, 2nd.

Note. Only **one** medallion to any one contestant irrespective of multiple wins.

Overseas S.w.l. Section

Europe:

BRS15822	6580	HE9HBV	1508
BRS26431	3486	HE9GMP	1340
A5662	3388	HE9EVI	616
G1516	576	LA-M-4811	732
GW7796	1378	NL-998	1036
I1-13395	1032	NL-290	217
I1-12387	500	ONL-383	8364
I1-144474	136	SP8-1079	390
I1-14073	52	SP9-6645	78
DM2542/L	1344	SP9-86207	65
DMEA4681A	315	SM4-3835	1474
DMEA4295A	32	SM3-3686	340
DMEA4238/O	24	SM4-3958	224

Oceania:

9M2-31427 6192

Asia:

UA1-13618	3192	UF6-012-1	12
UA3-12711	2150	UB5-073380	4848
UA3-1271	1020	UB5-07325	4332
UA3-15118	680	UB5-0683	1272
UA3-127230	210	UB5-077237	980
UA3-127213	90	UB5-073273	240
UA4-0956	5022	UB5-0735	208
UA4-09476	440	UB5-068107	156
UA4-1522	288	UB5-07419	24
UA4-15234	Check	UA0-1283	720
UA4-09543	Check	JA1-4876	4020
UA6-101282	1408	JA1-10888	2540
UA6 08720	208	JA1-8065	1064
UA6-10140	120	JA1-3199	39
UP2-03883	306	JA4-2668	4712
UQ2-03780	1100	JA6-1687	2520
UQ2-03710	24	JA6-2500	2412
UD6-00110	570	JA0-1320	7084

North America:

VE3-7554	648	WPE-0FKU	210
WPE-9EIL	224		

S.w.l. Medallion Winners

For winner and runner-up in each continental area and for each band. Note.—Only **one** medallion to any one contestant irrespective of multiple wins.

North America: VE3-7554, 1st; WPE-9EIL, 2nd.
Asia: JA0-1320, 1st; JA4-2668, 2nd.
Europe: ONL-383, 1st; UA4-095-6, 2nd.
Oceania: 9M2-31427, 1st; no ward, 2nd.
South America and Africa: No awards.
80 mx band: BRS15822, 1st; no award, 2nd.
40 mx band: 9M2-31427, 1st; BRS26431, 2nd.
20 mx band: UB5-07325, 1st; UB5 073-389, 2nd.
15 mx band: JA0-1320, 1st; ONL-383, 2nd.
10 mx band: 9M2-31427, 1st; UB5-073-389, 2nd.

Report from Secretariat, I.A.R.U. Region 3 Association, to the Federal Council, W.I.A.

Gentlemen,

Last year, at Canberra Convention, I reported as Federal President on the activities of the Institute, the Executive, and the Secretariat in attempting to formulate an Interim Constitution acceptable to the Directorate of the Region 3 Organisation. It was stated that the draft constitution brought to the surface some widely divergent views from other countries, resulting in a series of amendments which were incorporated in a further draft constitution. The Institute at Canberra, through motion 1969/4.2 approved the I.A.R.U. Interim Constitution, and since that time the Interim Constitution has received the approval of the Directors from Japan, Philippines and New Zealand. The Secretariat determined that as a result of this approval, the I.A.R.U. Region 3 Association formally came into existence on 1st July, 1969. It thus took 18 months from the time the Institute agreed to call a meeting with the aim of forming an organisation, until the time the organisation was formalised.

During this period, the work of Federal Vice-President, David Rankin, VK3QV, was invaluable and the Interim Secretariat benefited greatly from his advice on international matters. As you will know, he declined to accept appointment to the Secretariat due to pressure of work, and the exigencies of his office in the Institute. The I.A.R.U. Region 3 Association is indebted to him.

The Association is also greatly indebted to the W.I.A. Federal President and Secretariat member, Michael Owen, VK3KI. The bulk of the detailed and arduous work connected with the formulation of rules embodied in the Interim Constitution fell to him. It is to his credit that a set of rules acceptable to four countries of widely different legal and social backgrounds could be drafted, circulated, amended, re-circulated and finally approved in what I believe is a relatively short time considering the difficulties of communication within the Region.

Having therefore formally come into existence, the Secretariat consisting of Messrs. P. Williams, VK3IZ; M. Owen, VK3KI; D. Wardlaw, VK3ADW; M. Hull, VK3ZS; commenced formal meetings and started to keep formal minutes for circulation to the Directorate. The Secretariat prepared a 23-page statement in July—its first month of operation—and mailed this to: I.A.R.U. Hdq., Region 1 Division, Region 2, I.A.R.C., J.A.R.L., N.Z.A.R.T., P.A.R.S., W.I.A. and the secretaries of Amateur Radio societies in Malaysia, Burma, Ceylon, Hong Kong, India, Korea, Nepal, Thailand, Singapore, Indonesia, Pakistan, New Caledonia, Fiji, Okinawa. This material was also sent to representative Amateur Radio operators in Iran, Afghanistan, Laos, Western Samoa. A point of contact in China, Cambodia and Taiwan was not known to the Secretariat.

This material, which was also forwarded to Federal Councillors, contained: A record of discussions in Sydney; a statement from the Sydney Congress; a statement of the I.T.U. Conference agenda; a copy of the Interim Constitution; a four-page explanatory covering letter, and a questionnaire. The Secretariat felt that this material would bring all societies up to date, and explain the nature of the organisation which had been formed to assist in the advancement of Amateur Radio in the Region.

At the second meeting of the Secretariat, called for September 1969, it was resolved to not call a further meeting until replies to the circular material had been received. We anticipated some questionnaires returned, and at least some acknowledgment from the 24 societies contacted. We regret to report that the response is disappointing, and we have from time to time wondered whether the material has actually passed through the respective mailing systems. Acknowledgment has recently been received from some countries, viz.: Japan, New Zealand, Western Samoa; so we have presumed that the material has left Australia.

Gentlemen, this brings me to the point where I wish to state what I see as the greatest barrier to success of the I.A.R.U. Region 3 Association. We must, I believe, establish firm contact with a person or persons in the countries of the region. Material sent in a printed form to a P.O. Box number or to the Secretary of a Society seems not to be the way to maintain effective liaison, and seems to be an ineffective way to maintain contact. Many ways to improve communications and liaison suggest themselves:—

1. **Personal contact** (this can be of several forms) the best, and I feel the most effective would be for some person from the Secretariat to actually go to these countries and search out a person connected with the Amateur Society and request that he canvass support for the Association, and be the known point of contact. This would be costly if it did not achieve the objective, but I feel would be a good investment if it did achieve better liaison and establish effective communication. The Institute took the initiative in getting the Association off the ground—the Institute may have to take the initiative in keeping it airborne.

An alternative is perhaps to call a conference of Region 3 Societies to be held centrally in South East Asia to which representatives from nearby countries could travel. This would have the added advantage that the forthcoming I.T.U. Conference could form the crystallising influence to such a Conference, and that such a Conference could have wider publicity value than a "whistle-stop" tour. Perhaps it is necessary for both activities to be considered.

In summary, I believe that personal contact must be established and maintained even though it is a costly business. Correspondence seems to be less costly, and less effective.

2. **Radio contact.** This seems obvious to a group of communicators who are equipped to maintain communication by radio throughout the Region. It is a matter that the Secretariat will give attention to almost immediately. Comments have been passed to the Secretariat about the use of the well-established "Sea-Net", on 20 metres each evening. Over the past two years I have felt loth to use this somewhat private net for Region 3 Association purposes, without invitation. Perhaps this is being too sensitive, and this avenue should be explored further. The very useful skeds I held in the past with W1IKE of A.R.R.L., and G2BVN of R.S.G.B. and Region 1, proved the effectiveness of these. Skeds with Regional representatives at least weekly should be possible, and may do much to improve liaison. The Secretariat is examining this aspect at the moment.

Notwithstanding the difficulties of communication, much informal and formal correspondence has ensued between the Secretary-General and I.A.R.U. Headquarters, and between the Secretary-General and Region 1, also from time to time between the Secretariat and other countries, especially the Directors. Of recent months, when an upsurge of activity has been apparent, most of the correspondence has been concerned with the forthcoming I.T.U. Conference. The Secretary-General receives communications from overseas in his capacity as a Region 3 officer, and the Federal Secretary of the W.I.A. receives communications from overseas in that capacity. It is of benefit to both organisations that the same person holds these offices, and while the function of the Federal Secretary of W.I.A. is to be overseas liaison officer, he should be closely connected to the Region 3 Secretariat while Australia is providing the personnel. Other countries have seemingly a similar view, as the overseas liaison officers are the Region 3 Directors for J.A.R.L. and N.Z.A.R.T. While Australia provides the Secretariat I believe that the officer responsible for W.I.A's overseas liaison whoever he is, and by whatever he is designated—should be close to the Secretariat.

In material sent out recently to the Directors, the Secretariat requested policy determinations on several matters. I have placed these before the Institute for determination in Adelaide, and they appear on the agenda paper. I refer to:—

1. **Item** 2.3 regarding the calling of a regional conference this year. You will recall that the next plenary meeting was scheduled for 1971 in Tokyo, but the calling of an I.T.U. Conference in that year has altered opinions, and we have asked the Directorate for some guidance.

2. **Item** 2.2 regarding the formulation of a regional policy regarding the 1971 I.T.U. Conference. This has been phrased in a positive way for the Adelaide Convention on the assumption that a regional policy should be determined. Japan and New Zealand have indicated that their Societies are at present holding study groups and the like in order to determine their own policy, and will communicate with the Secretariat in the near future.

3. **Item 4.1** regarding the proposed "General Regulations" submitted by the N.Z.A.R.T. Director. These have been modelled on I.T.U. Conference lines, and having studied them in detail, I believe they represent a fair set of rules of procedure should we consider the calling of a regional conference in the near future or at any time. I commend them to you for adoption so that the W.I.A. vote on the N.Z.A.R.T. proposal can be forwarded to the Secretariat.

During the debates on these items, I propose to put the views of the Secretariat on these matters, and following their resolution, I will through the Secretariat convey the views of the W.I.A. to the other Directors and the Region generally. It is perhaps fortuitous that the I.A.R.U. Region 3 Association has formally come into existence at precisely the same time as the Amateur Service is faced with a possible threat to its frequencies. One of the major objectives of the Association is the preservation of frequencies, and with that objective in view, the Secretariat hopes for perhaps more spectacular achievements in the coming year.

I wish finally to report on some administrative and internal matters. You will have noticed from the minutes of the Secretariat that a bank account has been opened and the first of the three W.I.A. contributions has been paid to the Secretariat. The J.A.R.L. has indicated that they wish to remit the sum of 500,000 Yen before the end of March, and they have been invoiced for this amount by the Secretary-General.

You will have noticed from the correspondence that the Secretariat has decided to adopt as a motif that as adopted by Region 1 and Region 2, with the map of Region 3 as a different centrepiece. The Secretariat is investigating the matter of having some stationery printed, and it has been suggested that the size of paper used by this international organisation be that of an international metric standard size.

Some correspondence has been initiated between the Secretariat and Mr. Pierce Healy, VK2APQ, in relation to the publication of a bulletin, and in relation to his appointment as Editor. The bulletin will be published on behalf of the Region by the Secretariat and prepared on behalf of the Secretariat by the Editor. There has been little material forwarded to the Secretariat from other countries for inclusion in a bulletin to date, but we hope and expect this to improve as our channels of communication improve.

Both the Federal Secretary and I have raised the matter of the position of W.I.A. Director in relation to the annual Convention. This was an aspect which we overlooked in Canberra, but which I hope will be discussed in Adelaide. I have endeavoured to keep you up to date with Regional matters by sending you any circular material sent out to the Region, and will continue to do so in my capacity as Region 3 Director—this is one of the advantages of being the chairman of the Secretariat, it is a simple matter to obtain extra copies for you.

In conclusion, whilst the past year could not be called one of spectacular achievement, it nevertheless is one of significant achievement, and above all, a firm base has been laid on which to build—admittedly slowly, but we believe surely. Over the past six months we have waited for the countries in the Region to ask the Secretariat to do certain things—the result of this approach has been disappointing. I believe the Institute, through its Director has to **initiate** in a positive way, and that this initiative has to be channeled through the Secretariat to stimulate the Region to achieve the objectives for which the I.A.R.U. Region 3 Association was formed. You have appointed a highly-qualified and competent group to the Secretariat, who have all worked very hard during the past 18 months since the Institute first suggested the setting up of a Region 3 organisation.

Looking at the matter from the point of view of the Institute, I consider that the Region 3 organisation must be given encouragement in every possible way by the Institute. In the long term, the philosophy of Amateur Radio must be established within those countries which are as yet not only not members of the Region 3 organisation but are not even Amateur orientated. The means by which this can be achieved may be a matter of debate, the usual Amateur activities such as contests no doubt offer one means of demonstrating to the world at large that the Regional organisation is a viable Amateur organisation. The long term achievement of our ultimate aims seems dependent on the leadership that our organisation is prepared to exhibit.

Finally, but not least by any means, both the Institute and the Region owe a debt of gratitude to Peter VK3IZ, who has not only been a hard-working Secretary-General in a formal capacity, but who for many years—since at least the Hobart Convention—has done everything he could to foster this organisation. I hope he retains this very special interest in the I.A.R.U. Region 3 Association for many years to come, it has, I believe, the potential for great things—dependent on the enthusiasm of its officers and your continued support.

(Signed) J. Battrick.

DX

Sub-Editor: DON GRANTLEY
P.O. Box 222, Penrith, N.S.W., 2750
(All times in GMT)

There seems to be a slight dropping off of the excellent conditions which we experienced last month, mainly on ten metres. However, there is plenty of good DX to be found and worked at all hours of the day. Sunspot activity is reported to be on the decline, with the May prediction being 79. The only confirmation to hand is 88 for last November.

John ZL2BAH will be doing a tour of duty with the Navy at Seato Hq. in Bankok and has been allocated the call of HS1ACS. Full details of his activities will be made available at a later date.

Neil VR1Q was due to go QRT from Tarawa at the time of writing, and will return permanently to Australia. QSLs can be had for his VR1Q activity from WA3ATP.

News from George ZL2AFZ re the stations for which he is manager is as follows: Lester ZM3PO/C returns to ZL on 14th May, his logs to 7th April have been received. Roy ZM-1AAT/K on the Kermadecs still working all bands as well as listening for the v.h.f. gang. New antenna system will shortly have him using a vee beam on Africa as well as a tri-bander on 20, 15 and 10. Harold AX0LD remains as active as possible, and George reports little delay in log clearances.

The life of a QSL manager is not always an easy one, and ZL2AFZ tells us that he handles between 75 and 100 letters every day, most of which are actioned and back in the mail on the same day as they are received. With a turnover like this, it is very inconvenient when some operators fail to include such vital information as GMT or the correct call sign, making the manager scan through the log seeking out the correct entry. We must keep it in mind also, that most managers perform these task in their own time and at their own expense.

I have no reports to hand of any 1.8 activity from VK this month, however there is quite a bit of activity reported from ZL of stations coming in from Europe and U.S.A. between 0500 and 0700, which of course is around sunset in ZL. At the other end of the range, Steve Ruediger over in VK5 reports JAs on 6 metres on 6th April, and once again I have the tapes here to prove it.

Steve also sends a very impressive list of stations heard, and supplies a tape recording of each one. This is a great help to me, for it gives an accurate indication of how the DX is coming in and provides vital information for some of the overseas news sheets. Thanks Steve for the trouble you take.

Hugh AX0HM, who gave us all another chance to get Heard Is. during his period of activity there, has now returned to his home QTH, after going QRT on 3rd April. Hugh made 2,000 contacts during his stay there and will be having his QSL chores undertaken by W7PHO, however any cards which have been sent to WA6EAM will be forwarded to the new manager.

We still have reports of solid contacts from King Hussein operating as JY1, usually around 1800z, however of late another one appeared using the call JY1APG who was reported as being a technician at JY1. This was dispelled by King Hussein in a letter to Geoff Watts DX News Sheet, in which he disclaimed any knowledge of the JY1APG operator. Further confusion has been added by the report that JY1 was operated by well known editor W2NSD/1 Wayne Green, during the latter part of April.

Further to a recent report of probable activity from Clipperton Is., Dick F2QQ, Mike F5HN, Ron F5QQ and WB2VAE plan a seven-day c.w./s.s.b. operation from that QTH during July. His F0NH licence is endorsed for Clipperton operation and is valid for three months. It is understood that weather conditions make sea travel very dangerous and the party plan to travel by seaplane.

The call sign situation in respect to the UK stations has finally been resolved, and here is the official statement on them. UK1 Europe, UK2 A-C-I-L-O-S and W are White Russia, UK2B/P are Lithuania, UK2F Europe, UK2G/Q Latvia, UK2R/T Estonia, UK3/4 Europe, UK5 Ukraine except UK5O which is Moldovia, UK6 A-E-H-I-J-L-P-U-W-X-Y all Europe, UK6C/D/K Azerbaijan, UK6F/O/V Georgia, UK6G Armenia, UK7 Kazakh, UK8 A-C-D-G-F-I-L-O-T-U and Z are Uzbek, UK8H is Turkoman, UK8J and R Tadzhik, UK8M and N Kirghiz, whilst UK9 and UK0 are in Asia.

ST2SA has been, and is, active on 14021 at about 1500z, and 21045 at 2000z. All QSLs must go direct to Dr. Sid Ahmed Ibranim, Box 125, Medani Hospital, Sudan. It is necessary to enclose six IRCs for a QSL, which sounds a bit steep to me.

A well planned operation from Aves Is. was due to take the air over the week-end of 2nd May by a group of YV operators using their own calls /YV0 or the group call of YV0AI. QSLs for the latter to W2GHK, or to individual stations at their home QTH.

The call sign WE4SUN, which appeared recently, was used by the Solar Eclipse Study station, Georgia Southern College Radio Club. It is valid only for prefix hunters, and QSLs go to W4DQD.

From the Pacific area the following stations rate a mention: KC6CP, Ray Boucher, Koror, Palau Islands, West Carolines, is active regularly on around 14270. KG6SY, from Marianas, is often in the Pacific Inter. Is. net on 14230 at 1430z Monday, Wednesday and Fridays, also in Micronesia Net 14335 on the other three week days at 0800z. Chuck KJ6CF, Box 114, A.P.O. San Francisco, California, 96305, is active daily except Tuesday and Friday, usually on 20 s.s.b. KJ6CD has been worked on 28 MHz. at 0001z, QSL to W5HM.

From the Marianas another operator in Fred KG6SM, QTH Saipan is normally on 14285 at 1300z and his QSL manager is W2CTN. Still with the American controlled Pacific stations, we have KA1B becoming active from Marcus Is. from 2nd July to 8th, using ten, fifteen and twenty only, and the operation for this one is by KA9RC. Finally, KR6TA on 14036 usually around 1300z, op. is Frank, who says QSL via the Bureau.

That OI prefix which has been heard and worked here during the last few weeks is quite in order, it is a special Finland allocation for "Centennia-I" celebration. OI3NY and OI3TY are two stations reported to date.

Recently I reported that GD5APJ had been heard and worked here in Australia. Enquiries made in the U.K. failed to yield any QSL address, however on good authority we can say QSL to F2QQ, can't give you his address as it is not in my book.

Recent activity from Malta has been quite extensive, however an item of interest is quoted in its entirety from the Long Is. DX Assn. Bulletin of 3rd April: "9H1BV, with the name Mary, is now signing 9H1USA. We logged her on 28030 KHz. c.w. at 1500z. She said QSL via R.S.G.B. We got our card back from Malta with **pirate** stamped on it."

Phil Miller, 501 Harcourt Drive, Elmira, N.Y., 14904, U.S.A., is QSL manager for Israli station 4X4AE "Rafi". Phil will send the QSLs on with pleasure, but requests an IRC for non W/K stations.

I understand that WA5REU and K3RRY have sent equipment over to enable further activity from Manihiki, Nuie and Tokelaus. I do not know the story on this operation or who the operator is, although I have an idea it is ZK1AJ, however QSLs via Ed de Young, KH6GLU.

Other operation from the G countries at the present time include GM3SVK/P and GM3-YNC/P who were QRL from the following GM counties over the period preceding this week-end. April 18-19 East Lothian, April 20 Kincardine, 21st Moray, 23rd Perth, 24th Argyll, 25th-26th Bute, 27th Ayr, 28th Wigtown, 29th Dumphries, 30th Peebles, 1st May Selkirk, and 2nd May Berwick. QSL to home QTHs. GM-3LQI/P had completed a similar jaunt during the previous fortnight.

GC3UML operated from Guernsey April 8 to 13, QSL to G3UML with s.a.s.e. or IRC for direct reply. GD5AEL goes via DJ9HW, GD6UW goes via W2GHK, whilst GD3GMH is quite active. Finally, GB2DX goes via G3JOC.

It is reported that ON4TJ, who is manager for ON6AF, has now recovered after a long illness during which time he was unable to QSL. However if any Amateur or S.w.l. would care to send him a second card he will now be pleased to reply.

The trip to ZA as proposed by DL7FT has now been postponed due to lack of funds, as anticipated, however there is another ray of hope for this rare one, as DJ0UJ hopes to operate from there when he goes to Albania to visit relatives on vacation. He is formerly TA2BK.

The DX-pedition of the month bulletin is now out and there are quite a number of points which need emphasis, contained therein. They are a very busy group and one who helps Amateur and Listener alike in the never ending hunt for that elusive contact or QSL.

They are not complaining, but there are some points we can assist them with, first of all it is essential that all cards should use GMT, and change date as midnight GMT passes. This is easy to overlook. Contest stations are asked to be very careful of time and date, and also requested to enter their received contest number. S.w.l's are advised where possible to show serial numbers where received.

It is helpful to show the call sign of the station being QSL'ed on the back of the envelope and if you want a quick return and have more than one contact, use separate envelopes for each card. However, if you have a large number of cards, they would prefer you to use the Bureau. They QSL every card received, so there is no danger of not getting a reply if sent via the Bureau even if it takes a bit longer.

Finally some short items of general information from their bulletin. Cards for DJ6QT, II1MOL and 4MIA from the "CQ" Contest of Oct. 25 and 26 phone week-end are being handled. Logs for CR5SP between Sept. 11, 1967, and Dec. 21, 1967, Feb. 25, 1968, to April 6, 1968, and since June 30, 1968, are missing. 3V8MOL logs for the period of Aug. 18 to 22 have recently been received. Logs for Bryan VP8JV, Sth. Georgia, are now being handled, and will cover one year from Nov. 15 last. Delete ZD9BM and CN8GE from the current list. GD3PBD, Peter, is another newcomer.

I cannot do justice to this bulletin, without deleting other DX information, however for anybody who wants their very informative and necessary sheet, write to DX-Pedition of the Month News Sheet, Box 17316, Raleigh, Nth. Carolina, 27609, U.S.A., enclosing a long envelope (addressed) and an IRC.

Many thanks to Geoff VK2BGP, examiner of the correspondence section of the Y.R.S., for a lengthy reply to my SOS for assistance in assisting newcomers to radio, who periodically write or call in at work for information.

MANAGERS

AC3PT (Jan. '70)—via W1FLS.
CR3KD (s.s.b.) -WA4PXP.
FB8XX—F2MO.
FB8YY F9MS.
HS4ABJ—K4WHK.
HS4ABV—W5PJR.
HS4ADJ—WA2VTL.
HS5ABD—W6DQX.
PJ8AA—W2BBK.
PJ8KH -W2DV.
PJ8PM—W2IVP.

AWARDS—The Gisborne Award

This is available to Amateurs and S.w.l's alike, all you need are QSLs from two stations in Gisborne, N.Z., since 1st January, 1969. Jock ZL2GX is custodian of the award, send him the log information plus three IRCs.

I am running a little late with the notes this month, due to a slight delay in overseas mails, thus I will have to cut them short here. Again my thanks to all who have written, and I acknowledge copy from George ZM2AFZ, Geoff Watts DX News Sheet, Monitor, Long Is. DX Assn., DX-Pedition of the Month, Steve Ruediger, Mac Hilliard, Ernie Luff, Chas Thorpe and VK2BGP.

A note to hand here from Neville VK3ACN to the effect that Edgar G3BID will be operating as FORT/FC from May 5 to 30 on all bands and modes, but mainly 20/40 s.s.b., with QSL manager Jack W2CTN. 73 and good DX de Don Grantley.

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CONTEST CALENDAR

4th/5th July: New Zealand Memorial Contest (3.5 MHz. only).
15th/16th August: Remembrance Day Contest.
3rd/4th October: VK-ZL-Oceania DX Contest (Phone).
10th/11th October: VK-ZL-Oceania DX Contest (c.w.).
10th/11th October: R.S.G.B. 28 MHz. Phone Contest.
24th/25th October: R.S.G.B. 7 MHz. DX Contest (c.w.).
7th/8th November: R.S.G.B. 7 MHz. DX Contest (phone).
5th Dec., 1970, to 11th Jan., 1971: Ross A. Hull V.h.f. Memorial Contest.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.," and back copies may not be available upon request. To preserve continuity of your files of "A.R.," please pay your annual subscription now.

VHF

Sub-Editor: ERIC JAMIESON, VK5LP
Forreston, South Australia, 5233.
Closing date for copy 30th of month.

AMATEUR BAND BEACONS

VK4	144.390	VK4VV, 107m. W. of Brisbane.
VK5	53.000	VK5VF, Mount Lofty.
	144.800	VK5VF, Mount Lofty.
VK6	52.006	VK6VF, Tuart Hill.
	52.900	VK6TS, Carnarvon.
	144.500	VK6VE, Mt. Barker.
	145.000	VK6VF, Tuart Hill.
	435.000	VK6VF (on by arrangement).
VK7	144.900	VK7VF, Devonport.
ZL3	145.000	ZL3VHF, Christchurch.
JA	51.995	JA11GY, Japan.
W	50.091	WB6KAP, U.S.A.

The beacon list is gradually growing in length. Another is added this month as the result of a message from Doug VK8KK in Darwin that WB6KAP on 50.091 MHz. has been heard by Ross VK4RO and Peter VK4ZPL on 28th April at 1230 E.S.T. No QSO resulted, but skeds are now being maintained around 1100 E.S.T. daily, on 28.625 MHz., in an effort to make it two-way on 6 metres. So, once again, 6 metres can offer a surprise for anyone.

Talking of 6 metre surprises, VK5 and VK3 received a very pleasant one on 25th April when an extended opening to Japan was available for about five hours, commencing around 1530. At times the band was an utter bedlam, and those on the air found the going a bit tougher than expected. However, some stations were able to notch up scores to about 25 JAs worked, many at good signal strength. Noted in VK5 were the following districts: JA0, JA1, JA2, JA3, JA4, JA6, JA7, JH1 and JH3. News from Bob VK3AOT indicates similar districts available in his State, plus some JR signals. The band was open from 1630 to 1830, signals up to S9 with considerable QSB. Bob also mentioned the path being open to VK4 to midnight, similar to VK5, where Gordon VK4ZGA and Bob VK4ZZE provided the main contacts around 2330, to S9.

Many missed the excellent opening to Japan through not expecting anything like this to happen. Some were at football, others doing housework, gardening, etc. I was working, and so the sad story goes on! However, I think the following bears a mention. One Amateur was heard to complain he could not make any headway working the JAs as his nearest Amateur neighbour not far away was blocking him out, and I guess vice versa in turn. There is an obvious simple solution to such a problem. Any two or more Amateurs must know such problems exist with even local working, and particularly with Australian DX, when you are living close together. Prior arrangements must be worked out by the parties concerned that while one station transmits, the other remains off the air. As soon as he finishes the QSO which would not be long for DX working, he stays off until his neighbour has finished. By such rotation of contacts, quite a number of stations can be worked in a short space of time, much better than working nothing at all. So get on with it, any in this situation, and work out a destiny for yourself and your neighbours, it's too late when the DX is coming through!

And still on the DX, congratulations to Ron VK3AKC, for winning the 1969-70 Ross Hull Memorial V.h.f. Contest with a commendable seven-day score of 3,338 points, a daily average of almost 480 points. The overall response to the Contest is very disappointing to anyone with a genuine interest in v.h.f. The Federal Contest Committee made no comment when submitting the results, the total response from Australia of 33 stations was all the comment that was needed! Two logs from VK5, one of them mine. Small wonder I feel like hiding my head in shame. I have been hammering for a long time for a better deal for v.h.f. operators in the Remembrance Day Contest, but if the Ross Hull results is any guide to likely participation by such operators, and perhaps Limited licensees in particular, then the ground is being cut from under my feet, making it considerably harder to gain any worthwhile improvement. Therefore, I think the deplorable lack of interest in the Ross Hull Contest should be the subject of discussion at V.h.f. Group meetings in all Divisions of the W.I.A. to see what is wrong. If you have any answers or suggestions, let me have them soon.

I am pleased to note that Bob VK3AOT has been appointed Publicity Officer of the VK3 V.h.f. Group, and the following should be of general interest. Alan VK2ZEO in Deniliquin has been working regularly into Melbourne on 432 MHz. (more details awaited). The distance is about 160 miles, so there should be opportunities for VK3s to add another State for 432. Bob also advises from a letter from Col VK8CM, that the Darwin Amateur Radio Club is installing 6 and 2 metre beacons, the proposed frequency on 6 being 52.200 MHz., with 50 watts of r.f. As soon as something concrete comes out of this information in the way of the beacons being actually operational, I shall be glad to incorporate them in the list at the head of this page. Further, Bob mentions just about all the bugs have been ironed out of the VK3 beacons, but they are now awaiting call sign before being able to proceed. So it looks like VK3 will surely have something operational in 1970, leaving only VK2 to fill that final gap.

A letter from Brian VK3BBB on the subject of the proposed "Worked All Bands Award" mentioned in May "A.R.," suggests the award be called "Worked All Bands Available Award" -thus overcoming the problem of the limitation of bands available to Z calls. The idea is quite good, and worthy of further thought, Z calls to work all bands between say 52 and 1296 or 2300 MHz. (representing a reasonable upper limit to likely participants), while those with Full calls would need to work the same plus 160 to 10 mtres inclusive. Workable? What do you think? [As we see it, the above comments are not valid. Both the original suggestion, and the draft rules made available at the last Convention, make provision for A.O.L.C.P. holders. The idea of setting 2300 MHz. as a "reasonable upper limit" completely nullifies the original idea behind the award of encouraging operation in the u.h.f. bands. -Ed.]

I note with interest preparations are well under way for the South East Radio Groups Convention at Mt. Gambier over the holiday week-end, 13th and 14th June, and that the Group now have their own Club call sign of VK5SR, which will be used as the official station for the Convention. The programme as always looks very interesting and I don't think you would be disappointed if you went along —the true country-style hopsitality will long be remembered. The Club station will operate on 144.100 MHz. a.m., Channel A and B f.m., and 52.525 MHz. f.m.

E.M.E. DE LUXE!

Project Moonray. Here's a real winner for world-wide 432 MHz. DX! The antenna consists of a 100 feet square parabolic reflector which is built on the ground and points straight up. The reflector is galvanised screening with one inch holes with a shape accuracy of plus or minus one half inch. The primary feed is supported on a trolley and is driven by a clock controlled motor which gives moon tracking for two hours. The feed trolley track is supported on another trolley which gives control in declination.

The gain and beamwidth for various frequencies, as measured by radio astronomy techniques, is as follows:

Freq.	Gain	Polarisation	Beam Width	Xmtr. Power
144.032	31 dB.	Circular	4.8 deg.	800w.
220.001	34.5 dB.	Circular	3.1 deg.	700w.
432.000	40.2 dB.	Circular	1.5 deg.	700w.

The receivers are mounted in the feed trolleys and have noise figures "consistent with the frequencies". 144 MHz., 2 dB.; 220 MHz., 1.5 dB.; 432 MHz., 1 dB.

1296 MHz. is in the works and although not ready has the following specs.: 1296.00 MHz., gain 49 dB., linear polarisation, 0.55 deg. beam width and receiver noise figure 0.7 dB.

A professional set-up? No! It's Sam Harris' W1FZJ-KP4 at Aricebo, Puerto Rico. And does it work! To the date line of my information, Sam had worked SM7BAE, K6MYC, W1MX and K2CBA. The first two contacts were "particularly pleasing" for Sam. He heard them in contact, QSY'ed to frequency and his "CQ" brought the results.

My thanks to "Break In" magazine for this information which was originally listed in Veron v.h.f. bulletin.

1296 MHz. ACTIVITY IN VK4

From Neil AX4ZT comes some interesting news about 1296 MHz. activity in VK4. Activity on this band slowed down when Tom VK4KE returned to England late last year. However, Tom AX4NO in six months built a complete 1296 station, and together with AX4ZT attempted to measure antenna gain over a distance of two miles, but multipath propagation caused this to be abandoned. On 11th April contact between the two stations was made over a distance of 217 miles, first using c.w., then a.m. and n.b.f.m. 559 c.w. contacts ensued both ways, and R5 S2/3 reports with modulation. AX4ZT/2 was on Round Mountain (5300 ft.) in N.S.W. and AX4NO/4 on The Summit, 20 miles north of Brisbane. Then the latter moved further north to Belthorpe (1800 ft.), 12 miles N.E. of Kilroy, and on Sunday, 12th April, c.w. contact was made over a distance of 248.45 miles, reports from AX4ZT being 559, and AX4NO 439. This distance is very close to the recent VK3ZKB-VK7WF contact. Both paths are very rugged, having to cross Mt. Barney in the Great Dividing Range at an altitude of approx. 4500 ft. No help from the weather due to an extensive low pressure system and considerable wind over the length of the paths. Signals on 1296 over both paths were steadier than those on 144 MHz., the liaison frequency.

The equipment used: AX4NO 1296 MHz. converter with 8.3 dB. noise figure, as described in Jan. 1970 "A.R.," fed to Yaesu s.s.b. receiver fitted with n.b.f.m. discriminator. Transmitter, 144 MHz. QQE03/12, about 9w. output, to 10 el. 2 mx beam. This 9w. also went to a MA4060 144/432 tripler feeding a 432/1296 BAY66 tripler, both of R.S.G.B. design. Output on 1296 2.5w. Antenna 8 ft. diameter F/D 0.6 parabola built in sections for transport, fed with home-made co-ax. and linearly polarised circular waveguide feed.

AX4ZT used the Jan. 1970 converter with n.f. of 8.4 dB. (this was improved from the original 9.8 dB. by modification to the mixer diode coupling loop), fed into Heathkit SB300 s.s.b. receiver. Solid state transmitter 2N3632 final with 10w. output to 10 el. 144 MHz. beam, or MA4060 144 432 tripler into BAY66 432/1296 R.S.G.B. tripler and 3w. output. Antenna 10 ft. diameter F/D 0.6 10 section demountable parabola with home-made low loss co-ax. feeding a simple dipole with half wave circular reflector. Both dishes constructed from plywood and fly screen mesh, and were 10 ft. high. A total of approx. 900 road miles were covered by both parties to complete these two contacts.

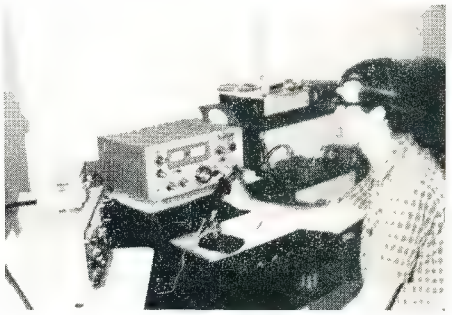
Congratulations to both gentlemen for an outstanding effort over rough country. Claims have been lodged for the VK4, VK2 records, but at the moment the Australian record position is obscure. Many thanks, Neil AX4ZT, for supplying such adequate information. I feel this is the type of news which is read with interest all over the continent.

TOWNSVILLE SKED TIMES

Your attention is drawn to a slight alteration to the sked times used by the Townsville Amateur Radio Club members. The v.h.f. section of the Club have two sked times on Sunday, one commencing at 8.30 a.m. and the second commencing at 11 a.m. The frequency used is 53.032 a.m. net. Thanks to VK4ZRS (Secretary) for above information.

MEET THE OTHER MAN

Wilf Emmett, VK7WF, formerly VK7ZAQ, hails from Burnie, Tas., at a location 200 feet above sea level, with an unobstructed ocean view for 180 degrees. Wilf first came on the air in 1959, at that time living in Hobart, and using 6 and 2 metre gear. All this was left in Hobart with his brother Reg, now VK7KK (ex-VK7ZAO), when Wilf moved to Burnie in 1966, to a "lousy QTH!" from where operation was only worthwhile on 2 metres. Subsequently, moving to his present home inspired him to construct equipment for 432 and 1296 MHz., with results known to all.



Wilf VK7WF

Wilf is an industrial chemist, but can find enough time to be operational on 52, 144, 432 and 1296 MHz. On 52 MHz. he runs s.s.b./c.w. 400w. p.e.p. to two 6KD6s, 3 element yagi 15 feet high, into a VK3 FET converter. 144 MHz. gear also runs on s.s.b. and c.w., 120w. p.e.p., using a QQE06/40 to a 10 el. yagi 20 ft. high, and another VK3 FET converter. 432 uses a.m./c.w. with either 150w. and a 4X150A or a varactor tripler. 11 el. yagi 10 ft. high, converter uses two-stage pre-amp. to tube converter with crystal mixer. The tunable i.f.

is a Yaesu FRDX400 at 28 MHz. On 1296 MHz. Wilf uses a solid state converter with crystal mixer, 28 MHz. i.f., 3CX100A5 tripler from 432 to 1296 which is driven from varactor tripler, 15w. input, to the 3CX100A5, antenna 4 ft. home-brew dish with dipole feed.

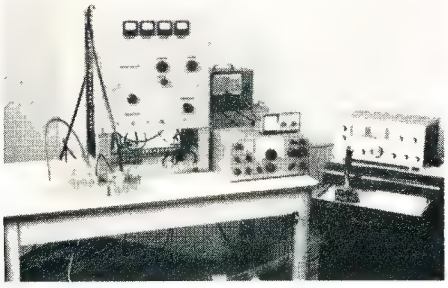
For s.s.b. purposes Wilf uses a home-brew h.f. phasing rig on 14 MHz. with transverters. His antenna systems are rather low, but he points out that this is due to a combination of factors: Living in rented premises, length of stay in Burnie unknown, excellent QTH anyway, and lack of time to lift them higher due to 432 and 1296 MHz. building programme.

Wilf has worked all States from VK1 to VK9 inclusive and ZL1, 2 and 3 on 52 MHz., and VK2, 3, 4, 5 and 7 on 144 MHz. On 432 the areas are Geelong, Birchip and Melbourne in VK3, and a "scratchy" contact to Mt. Gambier. Melbourne and Geelong are his contact areas on 1296 MHz. He holds a certificate for Worked All States on 50 MHz., and was the VK7 Ross Hull Contest winner in 1962 3. (I note in May 1970 "A.R.," Wilf won the VK7 Ross Hull Award for 1969/70.)

During former years, Wilf was Secretary of the VK7 V.h.f. Group and Vice-President, North West Zone in 1968. Looking to the future, he has his eyes on contacts to Adelaide area on 432 and 1296 MHz. and given a reasonable chance he hopes to get there.

In the photograph depicting Wilf's gear, from left to right we see the 432 varactor tripler/filter and 1296 tripler are in little boxes, rack contains 2 and 6 metre transverters, 2 metre linear, the 6 metre linear normally mounts in the space at the bottom of rack, then s.s.b. exciter, and FRDX400 receiver on right. The 432 final rests on the floor!

So there's a man to keep an eye and ear upon, he's got the gear, and the location, most of the remainder is up to you at the other end.



VK7WF—see text for outline of equipment.

GENERAL NEWS

Of some note to those in other States is that interest in repeaters is growing in VK5, experimental equipment has been built and tested. The last meeting of the group was held with 14 members present and Garry VK5ZK was elected co-ordinator of the group.

Doug VK8KK, in Darwin, sent me a letter which just missed out on the closing date for copy last month. However, much of the information in the letter is of general interest. He reports first trans equatorial openings to Japan from Darwin occurred on 19th February this year and lasting from 1930 to midnight. TE signals get up to over S9 most evenings, but a.m. signals are very hard to copy even with 100% modulation. He notes with interest that Brian VK6VV/4 is getting mainly F2 with TE occasionally, from 1330 to midnight, whilst those living in Cairns, Rockhampton and Carnarvon are similarly treated. David VK8AU in Tennant Creek gets F2 about sundown, followed by mostly F2 with TE. So there is plenty of variety in the north.

Doug and David have been keeping regular skeds on 6 metres with W6ABN, WB6NML and W6JRA from 0910 to 1100 E.S.T. on Saturdays and Sundays, confirming they are there on 28.633 MHz. at 1100 hrs. So far nothing has been heard althcugh the Ws are running 600w. output to stacked 9 el. yagis! Most Ws use 50.1 to 50.125 as their DX channel. In New Orleans there is now a beacon, K5AGI, beaming south midnight to 1400, on 50.105, running 500w. or 800w. on demand.

The JAs have been working KX6HK on 52.2 a.m. in the Marshall Is. but Doug had not worked him at time of writing. DU1FH reports there is little DX activity in the Philippines as most of the locals are now tied up to a net frequency.

Thank you Doug for your letter, the information is very helpful, and gives us down here just a little idea of what you must be enjoying in the north.

Finally, very pleased to receive my QSL card from Bernie VK6KJ confirming 144 MHz. contact with him during Feb. And I guess there will be many others just as pleased to receive theirs, some 66 others in fact!

Will those kind enough to send me copy for inclusion in "A.R." please ensure it arrives here by 30th of the month at the very latest, a day or two earlier would be preferable. Anything beyond the 30th inevitably must be left a month, and frequently the news is then outdated. Your co-operation is gratefully sought.

That's all the news for this month, nothing received from VK2 or 6. Always pleased to hear from anyone. The thought for the month: "Dogs are much like people. Usually only one in a group is barking at something in particular; the others are barking at him."

Until next month, 73, Eric VK5LP, "The Voice in the Hills."

VK2 MID-WINTER V.H.F.-U.H.F. CONTEST 1970

The Contest Committee of the VK2 V.h.f./T.v. Group invites all Amateurs and S.w.l's with v.h.f. and/or u.h.f. equipment to participate in the 1970 Mid-Winter Contest. This will be held during the Queen's Birthday week-end in June. Copies of these rules are being sent to all States and ZL, welcoming distant QSOs.

Date/Duration.—Contest starts Sat., 13/6/70 1400 hrs. (E.A.S.T.) and finishes on Mon. 15/6/70 1200 hrs., with rest periods.

The operating times are:
Sat. 13/6/70—1400 hrs. to 2200 hrs. (8 hrs.).
Sun. 14/6/70 0800 hrs. to 1100 hrs. (3 hrs.).
,, ,, 1200 hrs. to 2200 hrs. (10 hrs.).
Mon. 15/6/70—0800 hrs. to 1200 hrs. (4 hrs.).

There are two time divisions for which entries may be submitted: **Division "T"** for the Total, or overall contest duration, and **Division "S"** for the best scoring six consecutive contest hours which may, if desired, be broken by one of the rest periods; e.g. from 2000 hrs. Sat. night to closing at 2200 hrs., then from 0800 hrs. on Sun. morning to 1100 hrs., and 1200 hrs. to 1300 hrs. is accepted as six consecutive contest hours.

Entries may be submitted for either Division "T" (Total) or Division "S" (Six Hours), or both of these, but the winner of Division "T" will not be eligible to also win Division "S".

The various classes in which participants may enter are:
Class H—Home Station.
Class M—Mobile Station.
Class P—Portable (field) Station.
Class S.w.l.—Listener, Home Station.

A station may enter in more than one class if satisfying the conditions, e.g. he could work from home, then go mobile and then portable.

One scoring contact per station is allowed in every one "clock hour" for each band a station can work. One contact per clock hour means one QSO between, say, 1300 hrs. and 1400 hrs. It is not necessary to wait a full hour to have a second scoring QSO with the same station on the same band, e.g. "A" works "B" at 1259 hrs.; they may then work again any time from 1300 to 1359 hrs., and their following QSO is between 1400 and 1459 hrs., and son.

A mobile station may work the same station within the hour period, providing he has increased his distance from that station by more than 10 miles.

Serial Numbers must be exchanged as usual before points may be claimed for a contact. The five or six digit serial number to be the RS report (RST for telegraphy) followed by three digits starting as shown below and increasing by one for each successive contact:
For all 6 metre QSOs .. .. start at 601
For all 2 metre QSOs .... start at 201
For all 420 MHz. QSOs ... . start at 401
For all other (incl. t.v.) .... .. start at 001.

Note that the numbers for Net QSOs are to be in the same sequence of numbers as for the whole band.

Entries should be sent to reach the Secretary, V.h.f./T.v. Group, Wireless Institute Centre, 14 Atchison Street, Crows Nest, N.S.W., 2065, by Friday night, 17th July, 1970.

The committee would appreciate all comments on the contest and all entries even if you work only one station. Any enquiries can be sent to Bill O'Donnell, VK2ZBU, 41 High St., Willoughby, N.S.W., 2068, or in business hours phone 40-5255 (Sydney STD 02). If any station intends operating in the field the committee would appreciate notice of the station's location so that all concerned can be notified.

TABLE OF INCENTIVE RATINGS AND MULTIPLIERS

Rating for Amateur t.v. (black and white) is video band rating x 2.

Category	Rating	6 and 2 mx Nets: Home/Port./Mobile	52 and 144 MHz. Tune: Home	52 and 144 Tune: Port./Mobile	70 cm. (438) Net: Home	70 cm. (438) Net: Port./Mobile	420 and 576 MHz.: Home	420 and 576 MHz.: Port./Mobile	1215 MHz.: Home	1215 MHz.: Port./Mobile	2.3 to 10 GHz.: Home	2.3 to 10 GHz.: Port./Mobile	21 GHz.: Home	21 GHz.: Port./Mobile
6 and 2 mx Nets: Home/Port./Mobile	1	2	4	5	4	5	10	11	16	17	20	21	23	24
52 and 144 MHz. Tunable: Home	3	4	6	7	6	7	12	13	18	19	22	23	25	25
52 and 144 MHz. Tunable: Port./Mob.	4	5	7	8	7	8	13	14	19	20	23	24	26	27
70 cm. (438) Nets: Home	3	4	6	7	6	7	12	13	18	19	22	23	25	26
70 cm. (438) Nets: Port./Mobile	4	5	7	8	7	8	13	14	19	20	23	24	26	27
420 and 576 MHz.: Home	9	10	12	13	12	13	18	19	24	25	28	29	31	32
420 and 576 MHz.: Port./Mobile	10	11	13	14	13	14	19	20	25	26	29	30	32	33
1215 MHz.: Home	15	16	18	19	18	19	24	25	30	31	34	35	37	38
1215 MHz.: Port./Mobile	16	17	19	20	19	20	25	26	31	32	35	36	38	39
2.3 to 10 GHz.: Home	19	20	22	23	22	23	28	29	34	35	38	39	41	42
2.3 to 10 GHz.: Port./Mobile	20	21	23	24	23	24	29	30	35	36	39	40	42	43
21 GHz.: Home	22	23	25	26	25	26	31	32	37	38	41	42	44	45
21 GHz.: Port./Mobile	23	24	26	27	26	27	32	33	38	39	42	43	45	46

To find the Multiplier for a contact, ADD the ratings of the two stations, OR: In the above chart, select the horizontal row corresponding to the category of one of the stations. Then select the vertical column for the category of the other station. The Multiplier for that pair of stations is the number shown at the intersection of these two lines.

NEW CALL SIGNS

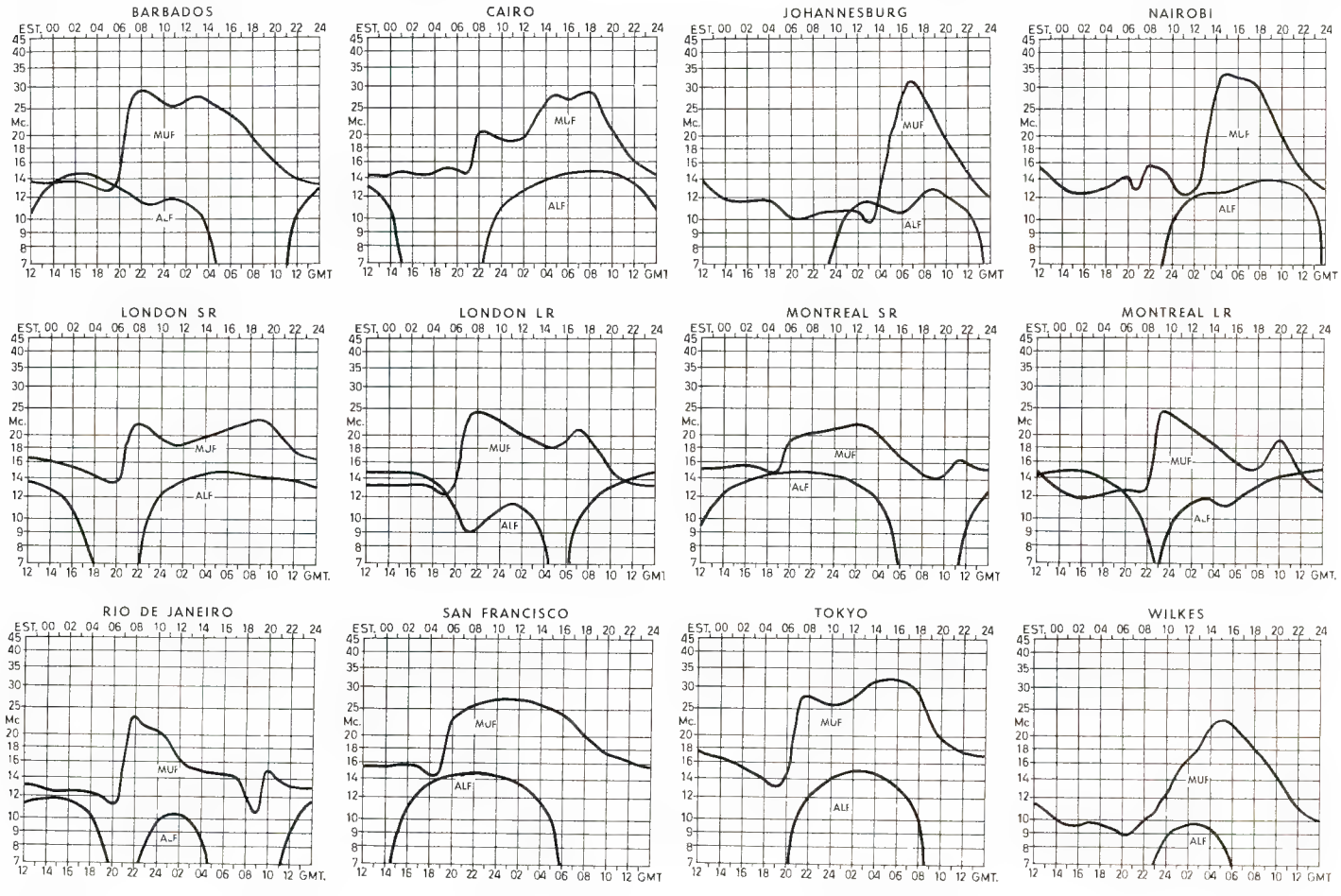
JANUARY 1970

VK1KO—R. K. Westbrook, 9 Haines St., Curtin, 2605.
VK1ZHG—G. R. Hovey, Station: University House, Acton, 2601; Postal: P.O. Box 4, Canberra, 2600.
VK2GS—N. J. Stewart, 131 Bradfield Rd., Lindfield, 2070.
VK2JG—N. S. Hill, 14/749 Pittwater Rd., Dee Why, 2099.
VK2OA—School of Applied Electricity, Sydney Technical College, Harris St., Ultimo, 2007.
VK2QA—N. M. Doyle, 43 Pine St., Randwick, 2031.
VK2BCD—L. D. Chrisholm, 86 Raglan St., Manly, 2095.
VK2BFE—F. Ellesmere, 80 Pringle Ave., Belrose, 2085.
VK2BGG—J. G. Griffiths, 10 Anne St., Wauchope, 2446.
VK2BKR—J. T. Kalopedis, 24 Walton St., Blakehurst, 2221.
VK2BLW—K. J. Watson, 6 Porter Ave., East Maitland, 2323.
VK2BSE—Australian Boy Scouts Association, 1st Epping Group, Station: 6 Essex St., Epping, 2121; Postal: P.O. Box 83, Epping, 2121.
VK2ZMG—A. S. Mitchell, "Arrawatta," Inverell, 2360.
VK2ZQJ—R. K. Graham, 13/818 Victoria Rd., Ryde, 2112.
VK2ZQR—R. C. Quick, Flat 4, 17 Kenrick St., The Junction, 2291.
VK2ZYL—B. J. Lacey, 1 Chapman St., Unanderra, 2526.
VK3CD—A. Campbell-Drury, 10 Colchester Dr., East Doncaster, 3109.
VK3VJ—A. W. Adams, 46 Margate Cres., Glen Waverley, 3150.
VK3BAF—J. E. Kerr, 71 Wattle Gr., Springvale North, 3170.
VK3BAV—R. M. Bruce. (Recorded as VK3BAU in June-September List).
VK3BBG—R. A. Jones, 18 Morley Crt., Karingal, 3199.
VK3BBI—L. Bretislav, 48 Pennell Ave., St. Albans, 3021.
VK3BBN—R. P. Vize, 11 Mossman Dr., Heidelberg, 3084.
VK3BBP—H. J. Morere, 4 Plunket St., Brighton East, 3187.
VK3BBQ—R.A.E.M.E. Training Centre Amateur Radio Club, R.A.E.M.E. Training Centre, Bandiana, 3694.
VK3BCC—J. L. Veale, 21 French St., Mt. Waverley, 3149.
VK3BCE—M. E. Morere (Mrs.), 4 Plunket St., Brighton East, 3187.
VK3BCK—I. C. Alger, 65 Vears Rd., Burwood, 3125.
VK3BCR—H. G. Austin, Quantong, Horsham, 3400.
VK3BCX—G. R. Mintern, Kanumbra, 3715.
VK3BRF—P. Schereck, 11 Waverley St., Sandringham, 3191.
VK3YAI—P. Y. Harris, 1312 Centre Rd., Clayton, 3168.
VK3YAJ—L. G. Milne, 7 Alexander Ave., Mornington, 3931.
VK3YBK—G. W. Jolliffe, 20 Ludbrook Ave., South Caulfield, 3162.
VK3YBO—R. H. Wales, Samaric Roadside, via Benalla, 3672.
VK3YBP—T. J. Robinson, 52 Warrandyte Rd., Ringwood, 3134.
VK3YBQ—W. A. Wright, 16 Lincoln Dr., Cheltenham, 3192.
VK3YBR—R. N. Wall, 31 Hutton St., Dandenong, 3175.
VK3YBU—P. J. Cohen, 15 Cambro Rd., North Clayton, 3168.
VK3YBV—R. E. Jenkins, 403 Pascoe Vale Rd., Strathmore, 3041.
VK3YBW—C. B. Wallace, 22 Norwood Rd., Caulfield North, 3161.
VK3YBX—D. M. Hunt, 341 Waterdale Rd., Heidelberg West, 3081.
VK3YBY—D. Andrews, 159 Princes H'way, Drouin, 3818.
VK3YCC—F. A. Wright, 245 Whitehall St., Yarraville, 3013.
VK3YCD—J. B. L. Emery, 5 Carmel Crt., Karingal, 3199.
VK3YCG—C. D. Beeforth, 10 Haig St., Mornington, 3931.
VK3YCH—M. C. Loxton, 5 Goldthorne Ave., East Kew, 3102.
VK3YCI—A. J. Jeffrey, 43 Millewa Ave., Chadstone, 3148.
VK3YCN—R. N. Elms, 18 Heritage Dr., Springvale, 3171.
VK3YCR—H. De Jong, 8 Collier Ave., Upwey, 3158.
VK3YCT—I. R. Johnston, Flat 9, 796 Warrigal Rd., Oakleigh, 3166.
VK3YCU—W. L. Riis, 40 Golf Rd., South Oakleigh, 3167.
VK3YCV—D. J. Bainbridge, Midland Motel, Mooroopna, 3629.
VK3YCX—P. A. McGill, 22 Grace St., Laverton, 3028.
VK3ZFB—D. J. Bruce, 3 Shadwell St., Cheltenham, 3192.
VK3ZQC—N. K. Langmaid, 3 Narralan Ave., Yallourn, 3838.
VK4FQ—A. B. Foster, 6 Warren Crt., Aitkenvale, 4814.
VK4LP—E. Hanham, Station: 12 Burton St., Booval, 4304; Postal: C/o. Officers' Mess, R.A.A.F. Base, Amberley, 4305.
VK4MS—W. R. McLaughlin, Unit 2, Lucile Crt., 1 Sunrise Bvd., Surfers Paradise, 4217.
VK4RJ—R. J. Hoare, 16 Wendover St., Grovely, 4054.
VK4UF—D. J. Fisher, 311 Ingham Rd., Garbutt, 4814.
VK4YF—S. L. Fittell, 78 Channon St., Gympie, 4570.
VK4ZAG—J. C. E. D'Alton, 30 Bayliss St., Toowong, 4066.
VK5JE—J. E. R. Dunkley, 9 Elva Ave., Pooraka, 5095.
VK5NZ/T—E. T. Schoell, 33 Avenue Rd., Highgate, 5063.
VK5QH—R. L. Mayfield, 35 Astrid Ave., Warradale, 5046.
VK5SO—C. F. Williams, 22 Laidlaw St., Henley Beach, 5022.
VK5ZFP—A. T. Farrell, 12 Warren Ave., Glenelg North, 5045.
VK5ZFS—R. E. Warnett, 18 Cudmore St., Somerton Park, 5044.

(continued on page 23)

PREDICTION CHARTS FOR JUNE 1970

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Overseas Magazine Review

Compiled by Syd Clark, VK3ASC

"CQ"

February 1970—

Meters, A Photographic Expose, W9PRH. Words and music of D'Arsonval.

Souping up the Old Receiver, Part 2, by W6HPH. More mods. to the old standard, National HRO. Applicable to a number of other receivers and should work with the Australian AR7.

The Simplest TR Switch, WA9CKP. Two back-to-back diodes.

A Sheet Metal Drill for Thin Materials, by VE3QQ. The standard point causes the drilling of a triangular or pentagonal hole. Such behaviour is prevented by using special points of the type recommended by this author. (A simpler method still is to buy a "P. & N." wood drill set ¼"-½" by 1/16th's, and Frost Engineering Co. make a special type drill for sheet metal.)

The Californian Kilowatt Syndrome, Sylvia Margolis. Humorous story of R.S.G.B. experiences with Bob Lane, WA6ZIQ/G5AAM, who served in U.K. with U.S.A.F.

Delayed Switching for Transistor Receivers, VU2JN. Preventing front-end transistor burn out in an elegant manner.

A Swept Audio Oscillator, VE7BRK. The sweeper is a very handy tool be it for a.f. or r.f. use.

A De Luxe 40673 Converter, VU2JN. Solid state seems to have solid advantages.

Receiver Signal Handling Capabilities, W2AEF. Part 2 of a very informative article on the finer points of receiver design.

Review, Drake TR6, W2AEF. Sideband for the ardent six metre man.

"OHM"—The Oriental Ham Magazine

February 1970—

VS6HK at the Festival. The story of how Ham Radio was shown to many who had never seen a station in operation. At the Festival of Hong Kong, 1969. Population 4 million, Amateur population 37.

Harts AGM. The story of activities at the Hong Kong Amateur Radio Transmitting Society annual general meeting, by Bob Finkbeiner.

Linear Amplifiers, KR6JT. A theoretical discussion of the various types. Advantages and disadvantages of each type are discussed.

The Name of the Game, HS3DR. A humorous dissertation of cycles versus Hertz.

Banned Lists; What and Why, HS3AL. Seems that some of the so called "Ham activity" emanates from people other than licensed Amateurs.

"RADIO COMMUNICATION"

February 1970—

Top Band to Ten Transmitter, G3HVA. A transmitter which takes the practice of t.v.i. suppression about as far as it is possible and describes a transmitter, using valves, which is as r.f. tight as can be achieved. Some very ingenious harmonic monitoring and suppression techniques are discussed.

A Self Contained Linear Amplifier for 144 MHz., G6JP. A straight forward practical design using a 4CX250B or similar tube.

Two Metre MOSFET Converter, G3HBW. Some comments enlarging upon the remedies to various troubles encountered by builders of a unit described in the June 1969 issue of "Radio Communication".

Eavesdropping on "Eighty", Anonymous. Written in somewhat satirical vein. This is an article for complacent members and non-members of national societies.

Technical Topics, G3VA. Pat Hawker this month discusses his usual wide range of subjects. Variable bandwidth filters, s.s.b. generation with CA3020 LIC, static protection, Colpitts overtone oscillator, low voltage square wave generator, frequency divider oscillator and ultrasonic cleaning. These are then followed by a resume of the characteristics of the new Marconi H2900 series high-performance receiver and finally slow scan DX t.v.

"RADIO RIVISTA"

"Radio Rivista" is an attractively printed monthly "Ham" journal from the Italian A.R.I. (Italian Radio-Technical Association). It corresponds in make up and content to our own "Amateur Radio".

Articles and comment come from Amateurs living in all parts of Italy and the advertisements display the well known American and English Amateur rigs, as well as those of Italian manufacture.

Altogether a lively, go-ahead Amateur magazine with plenty of information of interest to Amateurs generally.

January 1970—

A very good article from I1ZV describing the design and construction of a very sound final amplifier using two 813s in grounded grid. Well worth looking up if you are seeking a good design for a final, as the circuit diagrams, sketches and photographs make everything clear, even if one cannot read technical Italian.

From I1GU and I1MY comes a full description of their equipment for receiving satellite-produced photographs of the earth's surface. It gives due credit to "QST" authors K2RNF and W4MKM, whose articles it supplements.

Reminiscences from I1AS, notes on measurements of antenna impedance and other snippets are worthwhile.

(Review by VK3AHR)

"RADIO ZS"

February 1970—

The Pi Coupler, ZS5HF. An old subject which is still of vital interest to the active Amateur.

Joe, VK4AT. Reprinted from "A.R.," December 1969. Joe gets around.

Instant VFO, ZL2AMJ. Reprinted from "Break-In". The familiar Clap circuit in a new guise using a FET oscillator and another as a source follower for isolation. Should be useful to VKs.

"SHORTWAVE MAGAZINE"

February 1970—

Design and construction of a Low Pass Filter, G6HL. —60 dB. or better on all frequencies above 40 MHz. with a 100 dB. deep null at about 45 MHz.

The Linear Amplifier Stage in S.S.B. Working, G3KFE. Using t.v. line output valves, cooling and ventilation, loading and full output. 6DQ5, 6GB5 (PL500), 6GE5, 6HF5, 6JS6, 6KD6 and 6LQ6 are discussed.

Another Top Band Aerial Layout, G3NPB. Fitting the long aerial on the short block.

Explaining Binary Codes, G3UGK. Straight and binary coded decimal.

VFO Control on Two Metres, G3YUA. Discussing a practical design.

Solid State Crystal Switching, G3YUA.

High Impedance R.F. Probe, GW3PJT.

MW Car Radio as I.F./A.F. Amplifier, G8BQH. For a two metre converter.

Another Break-In System, G3TIE. The objects of the system are set out and then a practical solution is proposed using diodes and two relays. Reasons for choosing the devices which are employed are given.

"THE INDIAN RADIO AMATEUR"

December 1969—

Sushil's 1969 Special, VU2KX. A c.w./s.s.b. transmitter for four bands is described. Filter on 8 MHz. and v.f.o. covering 6-7 MHz. Uses valves.

For the Juniors. The Electrical Circuit, D.C. VU2CZ. A part of I.R.A's course in fundamentals.

Then follows a directory of "Indigenous Components". A listing of the components made by seven Indian firms in various parts of the country.

"V.H.F. COMMUNICATIONS"

February 1970—

This publication, which is well known to many of the v.h.f./u.h.f. fraternity, is published by DJ3QC at Erlangen, W. Germany. For distribution throughout English speaking countries, an English language edition is published each month and it is this version which is available to VKs. The stated objects of the publisher is to cater for the needs of Radio Amateurs "especially covering v.h.f., u.h.f. and microwaves". Our copy, by courtesy of Paul B. Jackson, 37 Minkara Rd., Bayview, N.S.W., 2104, to whom subscriptions may be sent.

A S.S.B. Transceiver with Silicon Transistor Complement, DL6HA. Part 1 of a series. The 144 MHz. converter with dual gate MOSFET mixer.

A Tiltable Antenna with Selectable Polarity, DJ9JT. Perhaps a more appropriate English expression would be "Selectable Polarisation". for that is what the author is talking about. This type of antenna is useful for a number of experiments including satellite work.

Is F.M. Advantageous on the V.H.F./U.H.F. Bands? DJ4BG. Pro and con arguments in favour of the various operating modes available to Amateurs.

Frequency Modulation of Crystal-Controlled Oscillators by use of Resistor Diodes, DM2AWD. No moving parts.

Narrow Band Frequency Modulation of Overtone Crystal Oscillators, OE6TH.

A 48 MHz. VFO for 144 MHz. Transmitters, DJ3MY. A simply constructed device which permits the 144 MHz. man to wander across the band at will.

Calibration Spectrum Generator for Two Metres, DL3XW. A valve type unit providing spectra at 1.00 MHz. intervals for use on the 144 MHz. band.

Modification of the DJ9ZR 001 5W. S.S.B. Transmitter, DJ8XR. One Amateur suggests improvements to another's design.

A Calibration Spectrum Generator for Two Metres, DL3XW and DJ4BG. A transistorised version of the valve thing, providing signals at 1 MHz. intervals up through the v.h.f. bands.

Simple Compact P.A. Stages for Two Metres DJ4RX. Some up-to-date theory.

An I.F. Diplexer for 28-30 MHz., DJ9JT. This device was designed to enable a number of receivers to be connected to a single v.h.f. converter. It provides six isolated outputs from the one input.

Cascode I.F. Stages, DJ4BG. Another use for the R.C.A. CA3005 and CA3028 integrated circuits.

Technical articles in "V.H.F. Communications" are well written and concise with clear diagrams and photographs. Australian Amateurs should find much to interest them in this journal and gain from a study of the articles. A great deal of information is packed into its sixty octavo pages.

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NEW CALL SIGNS

(continued from page 22)

VK6JV—J. Vogel, 816 Koombana St., Port Hedland, 6721.
VK6PM D. P. Murphy, 142 Broun Ave., Embleton, 6062.
VK6CIC—W. E. Dixon, Station: Portable; Postal: C/o. Officers' Mess, R.A.A.F., Pearce, 6084.
VK6ZDW—D. J. Wauchope, 68 Murchison St., Shenton Park, 6008.
VK7ZD—J. T. Kelly-Hart, 838 Sandy Bay Rd., Lower Sandy Bay, 7005.

CANCELLATIONS

VK1SW—S. D. Wheeler. Deceased.
VK2EE—J. L. Llewellyn. Not renewed.
VK2EJ —H. T. Noon. Not renewed.
VK2JG—School of Applied Electricity. Now VK2OA.
VK2NO—D. G. Hallam. Transferred to T.P.-N.G.
VK2OA—N. S. Hill. Now VK2JG.
VK2AIY—P. B. Parry. Transferred to Vic.
VK2ALF—W. L. Harriss. Not renewed.
VK2AVV—Penrith High School Radio Club. Not renewed.
VK2AZI -B. D. Woods. Not renewed.
VK2BAX—B. L. Nielsen. Not renewed.
VK2BHG—M. A. Harrison. Not renewed.
VK2BPC -P. J. Corbett. Not renewed.
VK2ZBM/T—B. G. Bromhead. Not renewed.
VK2ZCO—B. J. Hibberd. Not renewed.
VK2ZFN—N. Fiori. Not renewed.
VK2ZKJ—J. T. Kalopedis. Now VK2BKR.
VK2ZKW—K. J. Watson. Now VK2BLW.
VK2ZNJ—N. J. P. Carmody. Not renewed.
VK2ZOH O. L. Holmwood. Not renewed.
VK2ZPZ -W. Frost. Not renewed.
VK2ZQC—G. V. Cooley. Not renewed.
VK2ZSB—R. K. Graham. Now VK2ZQJ.
VK2ZTG—K. W. Close. Not renewed.
VK3AMC—J. McDonald. Transferred to Qld.
VK3AOU—J. A. Boell. Not renewed.
VK3APL -A. Campbell-Drury. Now VK3CD.
VK3ATQ—T. E. Whitfield. Transferred to N.S.W.
VK3AZZ R. J. Gray. Transferred to N.G.
VK3ZVJ—J. E. Brown-Sarre. Transferred to N.S.W.
VK3ZZJ—E. Westerman. Not renewed.
VK4AX H. R. Denby. Not renewed.
VK4FB -F. S. Beech. Not renewed.
VK4GM—A. F. Jacobsen. Transferred to W.A.
VK4PF—F. R. Parker. Not renewed.
VK4QP J. R. Godson. Transferred to S.A.
VK4WL—W. Robertson. Transferred to N.S.W.
VK4ZHO—R. J. Hoare. Now VK4RJ.
VK5DZ—M. J. Groth. Transferred to T.P.N.G.
VK5EI -W. E. Dixon. Now VK6CIC.
VK5EW—A. B. Foster. Now VK4FQ.
VK5IH—E. Hanham. Now VK4LP.
VK5KS R. A. Sedunary. Transferred to Qld.
VK5ZBL—R. L. Mayfield. Now VK5QH.
VK5ZJD—J. E. R. Dunkley. Now VK5JE.
VK5ZTS/T—E. T. Schoell. Now VK5NZ/T.
VK6BX—D. V. Hambleton. Transferred to Vic.
VK6KN—R. W. Jones. Transferred to S.A.
VK6CIA—J. T. Kelly-Hart. Transferred to Tas.
VK7HW—H. Westerhof. Not renewed.
VK7PA—A. E. Allen. Deceased.

VK ACTIVITY ON 160 METRES, CHECKED IN VK6

The following table is an analysis of VK calls heard on 160 metres for 1968 and 1969, showing monthly figures. The number of daily checks in 1968 was 256, and in 1969 was 333. All calls were counted once only on any one date.

1968

Activity on 89 days

	VK2	VK3	VK4	VK5	VK6	VK7	VK9
Jan.	0	0	0	0	0	0	0
Feb.	0	0	0	1	0	0	0
Mar.	0	2	0	0	0	0	1
Apr.	0	14	0	3	0	4	0
May	0	3	0	1	10	3	0
Jun.	0	1	0	4	13	1	0
Jul.	1	3	0	13	3	1	0
Aug.	0	8	0	3	0	0	0
Sep.	0	27	0	5	6	0	0
Oct.	0	12	0	1	9	1	0
Nov.	0	2	0	0	6	0	0
Dec.	0	1	0	0	4	0	0
Totals	1	73	0	31	51	10	1

1969

Activity on 102 days

	VK2	VK3	VK4	VK5	VK6	VK7	VK9
Jan.	0	9	0	5	0	0	0
Feb.	0	1	0	3	0	0	0
Mar.	0	0	3	0	0	0	0
Apr.	0	14	0	2	6	1	0
May	0	9	0	1	4	1	0
Jun.	2	11	0	2	0	0	0
Jul.	0	4	0	1	0	1	0
Aug.	1	17	1	10	4	1	0
Sep.	1	38	0	16	19	0	0
Oct.	0	19	0	4	7	0	0
Nov.	0	0	0	0	2	0	0
Dec.	0	0	0	0	10	0	0
Totals	4	122	4	44	52	4	0

The following separate calls were logged in the above:

1968: VK2BGH; VK3s ABR, ACH, APE, APN, ATN, ED, GK, GU, NW, RJ, RZ, TB, XB, XJ; VK5s BS, KO, LG, RO; VK6s AI, CW, IZ, NK, ZW; VK7MZ; VK9GN.

1969: VK2s AKL, BF; VK3s ABR, ACA, ACH, AFV, AKN, AMA, AML, APA, APN, AQ, ARL, ATM, ATN, AUJ, AXK, AYI, AZU, CV, GU, KF, KS, NW, RJ, TB, XB; VK4AH; VK5s BS, FM, GL, JQ, KG, KO, LP, RO; VK6s AI, CW, NK, ZW; VK7MZ.

George Allen, WIA-L6042.

— . . . —

MUNICH OLYMPIC DIPLOMA (M.O.D.)

The D.A.R.C. "Ortsverbands" of the Olympic City of 1972 invite all Radio Amateurs of the world to participate in the Amateur Radio friendship activity of the Olympic Games 1972. The Munich Olympic Diploma is established for this purpose. The requirements are:

1. All contacts with stations in Munich, from 1st January, 1970, 0000 GMT, to 2400 GMT of the day of the official closing of the Olympic Games 1972, will count for the award.

2. For the purpose of this award, all stations located in the "DOK" C-09, C-11, C-12, C-13, C-18 or C-30 are considered as Munich stations.

3. Contacts with Munich stations are credited the following points:

German participants, Phone 2 pts., C.w. 4 pts.
Other Europeans, according to WAE list: Phone 4 pts., C.w. 8 pts.
Participants outside Europe: Phone 6 pts., C.w. 12 pts.

The same station may be worked once per band and once per calendar year for the award.

4. The M.O.D. will be issued separately for c.w., phone and mixed. Operation of the award is possible on any single band and this will be endorsed accordingly. At least the following minimum points are required for each class:

Class I. (Gold), 250 points.
Class II. (Silver), 200 points.
Class III. (Bronze), 100 points.

5. Contacts may be made on 160, 80, 40, 20, 15 and 10 metre bands.

6. The M.O.D. is available also to S.w.l's as above.

7. Special requirements are issued separately for the Munich stations.

8. Fees: U.S. $1.00, DM 4, or 10 IRCs.

9. Address for the application: Engelbert Misera, DJ8ZU, D8 Munich 13, West Germany, Keuslinstr. 6.

Only a list of the QSO details is required. This list must have been checked against the received QSL cards, and certified by two other licensed Amateurs. The QSLs may be called in for inspection by the Award Custodian. QSLs to the Munich stations worked must also have been received in Munich before the issue of the award.

AUSTRALIAN V.H.F./U.H.F. RECORDS

50/52 MHz.: VK3ALZ to XE1FU, 1/5/59, 8418 miles.
144 MHz.: VK5BC to ZL2HP, 23/12/65, 1957 miles.
†432 MHz.: VK3ALZ to VK5ZDR, 28/5/66, 402 miles.
576 MHz.: VK5ZJL/5 to VK5QZ/5, 28/12/69, 195 miles.
†1296 MHz.: VK3ZKB to VK7WF, 6/2/70, 226 miles.
2300 MHz.: VK3XA to VK3ANW, 18/2/50, 9.0 miles.
3300 MHz.: VK3ZGT to VK3ZDQ/3, 14/12/63, 63.5 miles.

Australian E.M.E. Record

144 MHz.: VK3ATN to K2MWA/2, 28/11/66, 10,417 miles.

Australian A.T.V. Record

432 MHz.: VK5AO/T/P to VK5ZEF/T/P, on 16/2/69, 93 miles.

† N.B.—The records shown for 432 and 1296 MHz. are currently subject to superior claims which are being processed. Results will be published when available.

☆

PROVISIONAL SUNSPOT NUMBERS

FEBRUARY 1970

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	154	15	115
2	120	16	139
3	79	17	142
4	68	18	143
5	77	19	120
6	100	20	125
7	107	21	128
8	97	22	125
9	123	23	164
10	133	24	166
11	175	25	173
12	153	26	143
13	145	27	150
14	124	28	146

Mean equals 129.8.

Predictions of the Smoothed Monthly Sunspot Numbers

March	94	June	90
April	93	July	88
May	91	August	87

—Swiss Federal Observatory, Zurich.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	316/340	VK5AB	297/314
VK6RU	314/339	VK4KS	293/308
VK3AHO	311/326	VK4FJ	287/307
VK4HR	310/329	VK4TY	284/288
VK2JZ	307/325	VK2APK	277/283
VK6MK	303/323	VK3TL	271/277

New Members:

Cert. No.	Call	Total
108	VK9KY	106/106
109	VK2KK	101/101

Amendments:

VK3ZE	244/247	VK3JW	201/202
VK4UC	217/217	VK3SM	190/193
VK3AMK	216/216	VK4RF	169/169

C.W.

VK3AHQ	301/315	VK2APK	274/282
VK2QL	300/323	VK3NC	274/300
VK4FJ	290/315	VK3XB	270/287
VK4HR	287/309	VK3ARX	270/279
VK2AGH	282/296	VK6RU	266/289
VK3YL	275/292	VK4TY	259/272

Amendments:

VK4RF	152/164	VK4KS	132/138

OPEN

VK6RU	315/340	VK6MK	304/324
VK4HR	314/339	VK2EO	302/325
VK2AGH	312/332	VK4FJ	298/323
VK2VN	308/325	VK3ARX	295/304
VK4SD	306/321	VK2APK	294/305
VK4TY	306/321	VK4KS	294/313

New Member:

Cert. No.	Call	Total
123	VK4QF	100

Amendments:

VK3NC	275/298	VK4RF	219/231
VK4UC	258/259	VK3HE	136/137

K.W. ELECTRONICS

KW2000B TRANSCEIVER

COVERS 10 TO 160 METRES

★ Six-band operation.
★ Lift-up inspection lid
★ Two-speed V.F.D. tuning.
★ Mechanical Filter provides pass-band for SSB.
★ No external antenna switching required.
★ Independent transmit and receive frequencies or true transceive operation.
★ 180 Watts P.E.P.
★ Matching AC power supply with built-in speaker.
★ Side Tone Monitor for CW.
★ Crystal controlled Receiver first mixer.
★ Output Impedance adjustable.
★ Easy to install in a vehicle for mobile operation.
★ Lightweight, attractive, robust and efficient.

Write for Technical Leaflet

Sole Australian Agent: SIDEBAND RADIO

73 COLE STREET, ELWOOD, VIC., 3184 Phone 96-1877

VK3 ADVISORY COMMITTEE

The Victorian Advisory Committee for the ensuing 12 months is comprised of:—

Mr. N. Storch
Mr. F. O'Dwyer
Mr. R. A. C. Anderson
Mr. L. Jackson
Mr. M. Davis.

W.I.A. QUEENSLAND DIVISION

STATE CONVENTION

will be held on

13th and 14th JUNE, 1970

at

SANDGATE, QLD.

The venue for the Convention is the R.S.L. Memorial Club Hall, in Keogh Street.

Registration Fees: Amateurs and Listeners, $3.50; XYLs and Friends, $2.50; Children (under 12), $1.50. The fee will include Saturday night dinner and entertainment. Registrations may be sent to the Convention Organiser, Mr. Bill Flannery, VK4XO, 71 Wishart Rd., Mt. Gravatt, Brisbane, Qld., 4122.

432 MHz. CONVERTERS

VK5 V.H.F. Group design

2 FETs, 3 transistors, single conversion, less crystal. Available in kit form complete with instructions. So popular in VK5 that only a few left

Only $13 from

BOX 1234K, G.P.O.,
ADELAIDE, S.A., 5001

QUAD COMPONENTS

See March "A.R.," p. 15. Hub $15, p.p. $1. Canes, set of 8, $12. Complete kit $40. freight fwd.

S. T. CLARK
26 Bellevue Ave., Rosanna, Vic., 3084
Phone 45-3002

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Swan, Hallicrafters, etc., Receivers and Transmitters

Specialised Service on all Swan Transceivers

14 GLEBE ST., EDGECLIFF, N.S.W., 2027. Ph. 32-5465

REPAIRS TO RECEIVERS, TRANSMITTERS

Constructing and testing: xtal conv., any frequency; Q5-ers, R9-ers, and transistorised equipment.

ECCLESTON ELECTRONICS

146a Cotham Rd., Kew, Vic. Ph. 80-3777

FEDERAL AWARDS

COOK BI-CENTENARY AWARD

The following additional stations have qualified for the Award:

Cert. No.	Call	Cert. No.	Call	Cert. No.	Call
184	AX3HB	202	VE6AAV	221	KG6AGQ
185	AX3XM	203	W2RBZ	222	ZS2PD
186	VS6DA	204	G3LHJ	223	YV1PP
187	AX4FJ	205	K6AQV	224	WA5OXK
188	W2PV	206	VE7VP	225	W2DF
189	ZS6LW	207	VE7BCI	226	W7PHO
190	W3CGS	208	K4BBF	227	ZL1BDN
191	VE3GCO	209	AX6KK	228	AX5FJ
192	W3EK	210	AX4NQ	229	C21JW
193	VE3BF	211	AX2ADJ	230	W5KDD
194	JA2EDG	212	I1CGM	231	WA6FQL
195	WA7FFS	213	WB6SFA	232	VE3AES
196	AX2AXI	214	WB4BAP	233	I1AJ
197	VO1IE	215	W8DA	234	W2ODO
198	AX2AAR	216	VE3GNM	235	G3RWQ
199	AX2BWF	217	AX9WD	236	AX3AJX
200	ZS6ACK	218	W2TP	237	AX4JI
201	VE6ABP	219	AX6TG	238	ZS4RN
		220	AX2VG		

W.I.A. V.H.F.C.C.

New Members:

Cert. No.	Call	Confirmations 52 MHz.	144 MHz.
73	VK3AMK	—	100
74	VK3AUN	—	100

D.X.C.C.

Addition to the Australian DX Century Club Countries List:

OJ0 Market Reef.

Contacts made on or after 27/12/69 may be counted for D.X.C.C. purposes.

Market Reef is an island located exactly on the boundary line between Finland and Sweden and directly opposite the Aland Islands.

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URUNGA CONVENTION

The 22nd Radio Convention was held at Urunga over the Easter week-end, with an attendance of about one hundred. It was most gratifying to the organisers that so many did attend this Convention as the founder and originator of the Urunga Convention, Crief Retallick, VK2XO, had passed away during the year. Discussions with his son and daughter indicated that they wished to see the Convention continued, and this year it was called the Crief Retallick Memorial Year.

There were three 144 transmitter hunts and a 7 MHz. hunt, with the usual Urunga Scramble. A trade display was arranged and VK2AHH took along his Hammond organ to provide entertainment.

HAMADS

Minimum $1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE.

Advertisements under this heading will be accepted only from Amateurs and S.w.l's. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at **P.O. 36, East Melbourne, Vic., 3002, by 5th of the month** and **remittance must accompany** the advertisement.

EXCHANGE: Creed Teleprinters for modern Communications Receiver. One Model 7 Page Printer; one Model 470 Tape Printer and Sender; one Model 7 Page Printer for wrecking; one home-brew terminal unit; rolls of tape and paper. Ring Leo Fowler, VK3ZGF, 25-3968 (Melb.).

FOR SALE: AR88D Receiver, product detector, handbook, spare tubes, excellent condition, being used on 6 and 2 metres at present, will crate and freight anywhere, $100. Hilco Universal Modulation Transformer with chart, $10. VK4ZJT, 23 Esplanade, Pialba, Qld., 4655.

FOR SALE: Drake 2B, 80-40-20-15 and full 10 mx band, 60 ohm co-ax. cable 66 ft., speaker, headphones with rubber shells, handbook, and two extra xtals, $250. Sec. Code Practice 3-way Oscillator (Model 150), $10. Junker Key (open), $10. Tech Tradiper Model TE15, 0.44 to 280 MHz., $20. Electric Clock 12-hour digital, $15. W. Meier, 3 Oxford Street, Oakleigh, Vic.

FOR SALE: Galaxy 3 Transceiver, excellent performer, good condition, complete with matching power supply and speaker, crystal calibrator and v.o.x., handbook, $310 or reasonable near offer. Phone 560-0645 (Melb.), VK3QW, 26 Alimar Rd., Glen Waverley, Vic., 3150.

FOR SALE: Hallicrafters SR-400 Transceiver with USB-LSB-CW, 200 Hz. CW filter, VOX, PTT, receiver increment tuning, 100 KHz. calibrator, noise blanker, etc. Drake 2C Receiver, 3.5 - 30 MHz., Ham bands plus broadcast bands, speaker, noise limiter, Q multiplier, 100 KHz. calibrator. Hallicrafter VFO, very stable, 3.5 - 144 MHz. Eico Tx, 90w., 3.5 - 30 MHz. 100 KHz. Calibrator. Saba, transistor radio, a.m., f.m., 25m-49m. bands, 6v., 240v. All equipment is as new, guarantee, working, come and see. H. Schoning, G.P.O. 392, Sydney, N.S.W., 2001. Phone 602-0333 Ext. 318.

FOR SALE: Heathkit SB100 Transceiver with power supply, handbook and Kyoritsu SWR meter, $350 cash, no offers. 9 Faunce Crescent, O'Connor, A.C.T., 2601.

FOR SALE: Lafayette Model HA500 Receiver with manual, near new, $175. Geloso Transmitter, G222-TR, $100. Lafayette Transistor Analyzer, KT223, $20. Multimeter, Model 200H, $10. Kyoristu SWR Meter, Model K-109, $20. Sansei Miniature Transistorised Test Oscillator, Model TO-3A, $12. Box assorted Valves and Valve Tester, $10. Muhleisen, 9 Fitzpatrick St., Waroona, W.A.

FOR SALE: No. 10 Crystal Calibrator, as new, with a.c. p.s. built in similar case to No. 10, $10. A.W.A. Crystal Calibrator, Type 1A8089, with d.c. p.s., output 50-100-1000 KHz., $12. Signal Generator, Type 1-130, 100-150 MHz., with in-built a.c. p.s., $10. Byer Disc Recorder, Type R33, 33-45-78 r.p.m., with recording amp., playback, p.u. level meter, three sapphire cutting stylii (2 micro, 1 std.) and alternative cutting direction gears, $40. Collaro "Studio" 3-speed Tape Deck, in original carton, new, unused, $25. "Glydon" TV Tuning Unit, long shafts, new, unused, less valves 6CW7, 6BL8, $4. TV Power Transformer, 280-0-280 x 250 mA., two 6.3v. at 4 amp., one 5v. at 3 amp., new, unused, heavy duty type, $6. Valve, CV788 (832), suit 522 tx, new, $2. Crystals: 455 KHz. Filter Crystal (1), RC Aus., $2. 7350 KHz. Type CR1A-AR (1), 50c each; 7370 KHz. Type CR1A-AR (2), 50c each; 7450 KHz. Type CR1A-AR (5), 50c each. The above suitable for converter service. Phone (Melb.) 58-7745. E. Manifold, VK3EM.

FOR SALE: Much modified 522 Transceiver, complete with power supply, front panel finished in grey hammertone, Rx has FET pre-amp., b.f.o., n.l., S meter, tuning range 144 to 145.3 MHz. Tx modulator 6V6s p.p. to 832 final. P.t.t. operation. Price $80 or nearest offer. Contact VK3YBO, R. Wales, Samaria Roadside, via Benalla, Vic., 3672.

FOR SALE: Yaesu FT-DX-100 with speaker and Hamcat Mobile Whip. Perfect condition and under guarantee, $500. Star Communications Receiver with matching speaker, cost $470, sell $260. Ian Ampt. VK3BBA, Stanhope, Vic., 3623. Phone 205 any time.

WANTED: A Communications Rx covering approx. 500 KHz. to 30 MHz. Suitable for SWL. Write with particulars to John Douglass (AX3YC), 4 Brodie St., Bendigo, Vic., 3550.

WANTED: Command Transmitter and Receiver in good condition. Also Creed or Teletype Tape Perforator. Fred Ryan, VK1RY, P.O. Box 43, Canberra, A.C.T., 2600. Phone 47-9886.

WANTED: Following Geloso components: Amateur Band Receiver Front-End, Type 2620A; Pi Coupler, Type N4/113; 32/1415 pF. Tuning Capacitor, Type N771; 23/209 pF. Tuning Capacitor, Type N774; VFO, Type N4/105. Malcolm Sinclair, VK2BMS, 52 Fourth Ave., Willoughby, N.S.W., 2068. Telephone (Sydney) 95-2362.

WANTED: One of the following ¼ kw. Q.G. Spark Transmitters: Marconi types 241C, 341, 369, 558, 355, 355F; Radio Communication Co. types PS17, T20, T24, T22, T29, or similar small home-brew equipment. Also quenched plate gap dischargers; high voltage mica condensers such as Admiralty pattern 5001 with rating 0.0044 uF, 20,000 volt test. R. F. Fisher, VK3BAQ, 241 Royal Pde., Parkville, Victoria, 3052.

WANTED: Single or Dual Channel Continuous Chart Recorder. Min. Chart width 3 inches, with Chart speed of about 1 inch/hour. Will consider almost anything. VK6DS, 6 Chrysostom St., Triggs, W.A., 6020.

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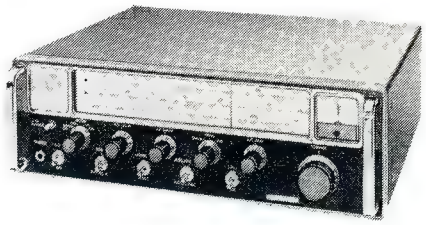

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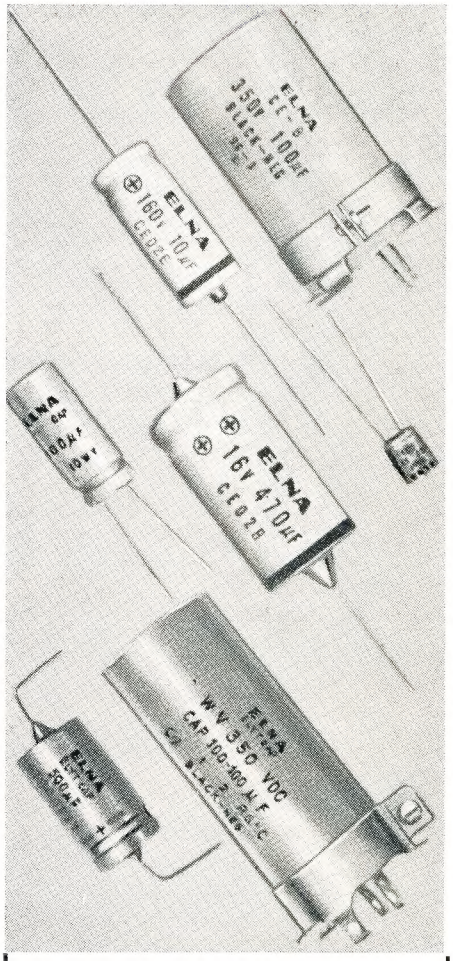

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